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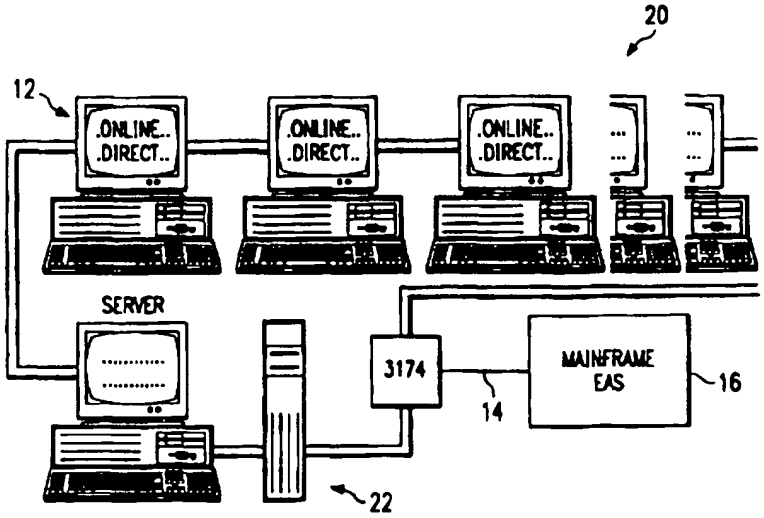

(57) Abstract

An electronic budgeting and planning system (20) for use in a data processing system having a plurality of instructive work stations (12) for providing budgeting and planning information and decision tools for managing a financial institution. The method includes the steps and the system includes the necessary structure for extracting a plurality of budgeting policies from a plurality of external budgeting policy external sources and configuring a budgeting and planning data structure in accordance with the plurality of budgeting policies. The method and system extract a plurality of financial account data sets relating to financial accounts from a plurality of financial account data set sources and populate the budgeting and planning data structure with the extracted plurality of financial account data sets. Modifying the populated budgeting and planning data structure is also performed to refine the populated budgeting and planning data structure for creating a final budgeting and planning data structure. The system (20) supports distribution of the final budgeting and planning data structure to the plurality of interactive workstations (12).

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METHOD OF AND SYSTEM FOR FINANCIAL INSTITUTION BUDGETING AND PLANNING

TECHNICAL FIELD OF THE INVENTION

The present invention relates to a method of and system for budgeting and planning in a financial institution and, more particularly, to an electronic budgeting and planning system for use in a data processing system having a plurality of instructive workstations and that provides budgeting and planning information and decision tools for managing a financial institution.

BACKGROUND OF THE INVENTION

Defining the direction of an institution is a fundamental requirement of good management. Adopting a formal planning process positions the bank to take advantage of opportunities presented by the dynamic banking environment. Increasingly, effective budgeting is recognized as a critical component of the planning process.

Ideally, the institution's budget should incorporate the detailed financial goals that must be attained in order to achieve the institution's strategic objectives. The budget should also provide a monitoring mechanism to measure the actual performance of the institution compared to established goals.

Today, banks use a variety of tools to prepare budgets including the general ledger, spreadsheets, asset/liability planning systems, modeling languages, and manual input forms. The budgeting and planning process that banks currently use is labor intensive, costly, time consuming, difficult and inflexible. The results are not satisfactory to most bank supervisors and managers. It is not reflective of real business, cost center oriented, out-of-date when completed, not credible, and inappropriate detail.

A budgeting and planning system needs to define the business for budgeting purposes in flexible, user-defined ways. For example, a system for this purpose should permit budgeting and planing by organization, product, and customer. It should provide the ability to budget at varying levels of detail, and to change margin assumptions by organization, product, and customer. Such a system should permit the use of alternate versions of budgets and plans. There is a genuine need for a system that improves the budgeting and planning process by being easy to use and permitting rapid turnaround of budget

consolidations and easy updates of forecasts based upon new actual data. Moreover, such a system should permit continuous budgeting. Financial institutions desire a budgeting system that facilitates top-down and bottom-up budgeting to support centralized control of the planning process, ownership control, allocations, and interest rate forecasts. At the same time, there is a need for a system that provides decentralized execution of budget unit plans for volumes, revenues, direct expenses, etc.

A need exists for a system that ensures completeness, integrity, and accuracy of budget and plan data, including, for example, ensuring a truly balanced balance sheet, providing detail reports that support budgeting for intercompany transfers and allocations, permitting cost transfers using standard unit costs or allocations, and supporting spreadsheet uploads and downloads of budgeting and planning data.

SUMMARY OF THE INVENTION

The present invention provides an electronic budgeting and planning system for use in a data processing system having a plurality of instructive workstations and that provides budgeting and planning information and decision tools to support annual budgets, short-term forecasts, and long-term planning. The present invention includes three major processes involved in preparing a budget and plan. A first such process is the population of an initial working budget and updated forecast. This process establishes the basic assumptions and rules to reflect the bank's budgeting policies and strategic plans. The population process also provides historical actual data, input from other budgets, and other external data that will be used as a foundation for the initial budget or updated forecast. This process also creates the initial budget based on the input data and various assumptions of future changes and growth policy guidelines.

Finalization of the budget and periodic updates of the forecast is another process that the present invention performs. The finalization process allows budget unit managers to modify the initial budget data to reflect their business needs and goals. This process also involves receiving and consolidating input, allocating expenses, balancing the bank budget, and then sending budget information back to budget unit managers for further refinement. Finalization also includes finalizing the budget and updating periodic reforecasts based upon new actuals.

Distribution of budget and plan information is a third process of the present invention involving reporting budgets via on-line viewing, spreadsheet downloads, and/or hard copy and providing budgets to a profitability system for reporting budget to actual

results through the year. The distribution process also provides periodic updates as plans or forecasts to the profitability system.

The budget and planning method and system of the present invention provides a comprehensive solution to the budgeting and planning needs of a large bank. As a single system solution, it provides full functionality for budgeting and planning and includes end-user PC access and local budgeting. Multidimensional budgeting for organization, product and customer, as well as multi-year planning with bank-defined variable time periods (month, quarter, etc.) are attractive features of the present invention. The present system uses security defined by the bank or financial institution to control access to data and budget rules. Moreover, the method and system accommodate bottom-up and top-down input, supporting any desired level of budgeting or planning detail.

The budget and planning system of the present invention is a cooperative processing system that combines the power and control of the host computer for data collection and storage, with the ease of use of PCS in a Microsoft Window or OS/2 client server environment for budgeting, planning, and analysis.

For the population process of the present invention, there are three components. One component, the budget configuration component, permits entering all of the budget policies of the bank, as well as growth and change assumptions, definitions, hierarchies, dates, and rules for budgeting. The data staging facility/translation control component ensures historical data from all external sources is consistent with various definitions and parameters to be used for budgeting. The budget population process populates an initial working budget based on budget configuration assumptions applied against

historical actuals, data from other budgets, and data from other external data bases. Thirdly, if the bank uses the Earnings Analysis System ("EAS") from Hogan Systems, Inc. of Dallas, Texas, or a similar profitability system, the budget population process of the present invention provides a direct feed of EAS historical actual data into the present system.

For the finalization process of the present invention, there are four components. A budget modification component provides a distributed facility to perform what is normally thought of as "budgeting" (i.e., expense projections, volume forecasts, run-off assumptions, etc.) and supports iterative budget changes. A revenue and expense transfer component, secondly, executes the various allocations and transfer rules against budget data (e.g., cost allocations, equity allocations, etc.). A third component, called auxiliary support, includes various utilities for copying, moving, and deleting budgets, and security controls. Lastly, a budget and planning system or BPS ledger component holds the results of all versions and iterations of the budget, as well as plans and forecasts to serve as the principal budgeting and planning database.

The distribution process of the present invention has two components. Budget Reporting is one facility that handles requests and on-line batch delivery, as well as spreadsheet download of budget reports. Secondly, an EAS link feeds budget amounts to EAS or a similar profitability system to report actuals against budget.

A technical advantage that the budget and planning method and system of the present invention provides is an extremely powerful application, through three aspects that form the foundations of its power. The first foundation is the multidimensional hierarchies that the system provides. The power of the multidimensional

hierarchies in the present budget and planning system becomes apparent to banks that wish to budget and plan their business in ways other than by traditional cost centers. The present budget and planning system allows a bank to establish separate organization, product, and customer hierarchies at any level of detail and breadth. This enables the bank to budget by any combination of organization unit, product, line of business, customer, customer segment, etc. Multidimensional hierarchies can also be used to apply formulas, growth rate assumptions, and other calculations to hierarchy points with automatic cascading to lower levels. Hierarchies also allow the bank to establish varying levels of budgeting responsibility. With the present method and system, lower levels may easily roll to higher levels of responsibility.

Another technical advantage of the budget and planning method and system is a comprehensive way to efficiently integrate input from managers, while ensuring consistency and integrity of the results. It is also very flexible to ensure that budgets reflect actual business conditions and can be adjusted as necessary. Within the system are all the features and functions necessary to create a multi-year budget and plan from the top-down or bottom-up as may be desired.

Yet another technical advantage of the present budget and planning system is that it also enables a bank to receive the input of managers closest to the business, while at the same time support central control and coordination of the budgeting and planning processes. With the budget and planning system of the present invention, a bank realizes significant benefits in the budgeting process, such as lower cost, less time, ease of use, improved control, and distributed operations. In addition, better results come from the budgeting process,

such as budgets that reflect the real business, and that include multidimensional budgets such as organization, product, customer budgets, with timely processing, and credible output.

Still another technical advantage of the present budget and planning method and system is that it provides a bank with new ways of using budgets, such as continuous budgeting, service level agreement support, and resource allocation based on forecasted return on equity.

The present invention, therefore, provides a wide variety of features and functions relating to the budgeting and planning processes of a financial institution. The following description provides details of the various embodiments of the present invention which is recited in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following description which is to be taken in conjunction with the accompanying drawings in which like reference numerals indicate like features and wherein:

FIGUREs 1 and 2 show possible configurations for operating the system and performing the method steps of the present embodiment;

FIGURE 3 shows functional blocks that depict the cycle of budget development as four phases for the present embodiment;

FIGURE 4 shows one example of a windows interface that the present embodiment employs;

FIGURE 5 illustrates how the present embodiment may also provide numerous icons for communicating with the system of the present embodiment;

FIGURE 6 shows certain aspects of the revenue and expense transfer functions of the present embodiment;

FIGURE 7 shows a flow diagram that depicts the conceptual design of the system of the present embodiment;

FIGURE 8 illustrates a hierarchy example typical of one usable with the method and system of the present embodiment;

FIGURE 9 illustrates an example of the hierarchy point assignment feature of the present embodiment;

FIGURE 10 shows a flow diagram depicting the relationships and operation of budget configuration module;

FIGURE 11 shows processing flow for the budget update module of the present embodiment;

FIGURE 12 shows a budget population flow diagram of the present embodiment;

FIGURE 13 shows a budget modification phase flow diagram for the present embodiment;

FIGURE 14 shows a flow diagram for depicting the operation of the present embodiment during budget modification through spreadsheets;

FIGURE 15 shows a revenue and expense transfer program flow chart of the present embodiment;

FIGURE 16 shows the processing flow diagram for the budget distribution function of the present embodiment;

FIGURE 17 shows and example of an organization balance sheet that the present embodiment provides for viewing and printing real time report requests; and

FIGURE 18 shows the auxiliary support facility functions associated with the present embodiment.

DETAILED DESCRIPTION OF THE INVENTION

FIGUREs 1 and 2 show possible configurations for operating the system of the present embodiment. On-line components of the present system may be designed to run on a personal computer coupled to a mainframe hardware configuration. Configuration 10 of FIGURE 1 shows personal computer 12 associated via network 14 with mainframe computer 16. Alternatively, as FIGURE 2 illustrates, configuration 20 permits practicing the method and system with mainframe computer system 16 which communicates via network server 22 to numerous personal computers 12. In either configuration, users employ communication link 14 between the personal computers 12 and mainframe 16. Configuration 20 of FIGURE 2 illustrates the local area network option for practicing the present invention, which provides for easy administration because only one copy of the instruction set and data structures for the present invention are required to service multiple workstations.

Within this context, FIGURE 3 shows functional blocks 30 that depict the cycle of budget development as four phases. In particular, the budget cycle that the present embodiment performs includes configuration phase 32, population phase 34, modification phase 36, and distribution phase 38. All of these phases are performed by workstation 12 according to the configurations described in FIGUREs 1 and 2.

Budget configuration phase 32 is the first phase in budgeting cycle 30. In budget configuration phase 32, basic decisions are documented that are made early in the development of a budget of strategic plan. Decisions typically established in budget configuration phase 32 include basic assumptions and rules to reflect a bank's policies and strategic plans. In addition, the duration of the budget and its dimensions and level of detail are

specified at this phase. Rate assumptions, equations to compute interest and funding amounts, and relationships between amounts are specified and planned.

Budget population phase 34 represents the establishment of initial budget values. During budget population phase 34, growth and change assumptions are determined, and historical data is provided as the foundation for an initial budget. Data is modified in preparation for general distribution to unit, product, or segment managers. Budget modification phase 36 is typically the most time consuming and iterative of the budget cycle 30 phases. During budget modification phase 36, the budget is continually refined until finalized and approved. Commonly, the initial budget is sent to managers for updates reflecting their business needs and goals. Then, input is consolidated, expenses are allocated, the budget is balanced, and the budget is sent to managers for further refinement.

In budget modification phase 36, several such iterations may occur. Modification may be restricted to levels specified by the institutions such as central staff, regional planners, and/or cost center or product managers. Ultimately, a budget is finalized. As actual results become available, the budget is periodically updated and forecasted.

Budget distribution phase 38 represents the final phase in the budgeting cycle and includes the release of budget information. Reports are generated and the finalized budget is unloaded to the profitability system to measure actuals against budget. With the present embodiment, the development of a budget is an iterative process in which functions associated with one phase may occur repeatedly in another phase. For example, rate assumptions are established during budget configuration.

However, these rates may be modified during the budget population and modification phases.

Budget cycle 30 may be viewed as a continuous process. As actual information becomes available, the budget is periodically updated and budget cycle 30 begins again. Forecasts are formulated based on actual results and future budget amounts are adjusted to reflect the most recent change in events.

The present embodiment of the invention may be considered as part of a family of systems that uses a graphical user interface (GUI) on a personal computer to provide on-line functionality for establishing and maintaining the framework and rules governing an earnings analysis system as described in U.S. Patent Application Serial No. 08/148,671 which is here incorporated by reference, the system of the present embodiment and a credit risk system described in U.S. Patent Application (Baker & Botts No. 18921-0125) processing. The GUI allows the user to interact with graphical elements on the window using either the keyboard or mouse.

Although there may be many types of GUIs that work well with the system of the present embodiment, FIGURE 4 shows one example of a windows interface that the present embodiment employs. In particular, ledger detail graphical user interface 40 permits the restriction and definition of various aspects of employing the present budgeting planning method and system. In particular, budget identifier field 44 may receive a unique budget identifier. Company identifier field 46 may receive the company identifier of the organization. Product identifier field 48 permits input of a valid product identifier for budgeting. Amount identifier field 50 may receive an amount identifier. Unit identifier field 52 may receive a unit identifier. Customer identifier field 54 receives a customer identifier. Starting year field

56 accepts a year figure for the first year of a particular budget. In the preferred embodiment, this budget year must be a valid year for a pre-specified reporting period. Other fields within ledger detail GUI 40 may operate as indicated in FIGURE 4. Ledger detail GUI displays budget amounts, therefore, for a specified company, unit, product, customer, and account. This list of amount identifiers displayed in ledger detail GUI 40 may be limited by selecting a specific category of amounts in category field 58. The list may also be limited by entering a value in amount identifier field 50 which displays the specified amount identifier. Note, if there is a restriction on the field for budget identifier 44, only individuals assigned to the appropriate rule (e.g., as defined by an associated security system) may maintain the ledger rows within the restricted periods.

FIGURE 5 illustrates how the present embodiment may also provide numerous icons for communicating with the system of the present embodiment. In particular, the method and system of the present embodiment may include an icon for each primary window or GUI for operating the present embodiment. For example, in FIGURE 5, budget and planning window 60 includes ledger detail icon 62. Ledger detail icon 62 if activated using a mouse or other input device, in addition as FIGURE 6 shows for the revenue and expense transfer functions as described in U.S. Patent Application Serial No. 08/148,671 and further described below. Menu window 70 provides the ability to activate the functions of the revenue and expense transfer module. These functions are available both to the budget and planning system of the present embodiment, as well as the earnings and analysis system. Therefore, a separate transfers window 70 is appropriate. To initiate a function, a user selects the appropriate menu window and then selects the appropriate icon. The

following discussion details the operations of the present embodiment and the associated data structures and functions that occur in response to these selections to illustrate the operations that the present embodiment performs for budgeting and planning purposes.

FIGURE 7 shows flow diagram 80 that depicts the conceptual design of the system of the present embodiment. In particular, source applications 82 generally represents that the present system provide data from the present budget and planning system for recurring budgets, from a data staging facility 86 as described in the EAS patent application, from the EAS system 88, as well as from other types of source applications 90 provide inputs to extract process 92. Optionally, translation control module 94 translates data from extract process 92. Budget population module 96 receives input from extract process 92 and, if appropriate, translation control module 94. Budget population module 96 receives input from budget configuration module 98. For budget population module 96, input goes to budget and planning system ledger 100. Budget and planning system ledger 100 communicates with revenue and expense transfer systems 102 and budget modification module 104. Output from budget and planning system ledger 100 goes to budget distribution module 106 and provides a release to EAS ledger update facility 108.

With more detailed attention to the various components of FIGURE 7, Data staging facility 86 and earnings analysis system 88 may provide data to extract process 92, however, through EAS 88 or the present budget and planning system 84, on-line selection criteria also may be specified. The data from source applications other than EAS, the present budget and planning system, or data staging facility 86 may include a general ledger, salary planning information or data from fixed asset

systems. Through extract process 92, data is formatted in a standard format for the present system. Translation control module 94 provides identifiers for company, unit, product, customer, and amount level data. The identifiers are assigned to extracted data based on user-defined translations. For example, foreign currency amounts are translated in translation control module 94 to a base equivalent. Also, translation exceptions are reported for audit control or correction. Furthermore, translation control module 94 assigns default identifiers for untranslatable data.

Budget configuration module 98 may define an unlimited number of budgets that may span, for example, 1 to 5 years with the present embodiment. In budget configuration module 98, monthly, quarterly, semi-annual, and annual intervals are supported. Intervals may also vary from year to year. For example, year 1 may be divided into 12 intervals while years 2 through 5 are divided into four quarters. Budget configuration module 98 also defines organization, product, customer, and amount hierarchies as well as defines access restrictions. Moreover, rates, net interest margin equations, and formulas are defined by budget configuration module 98 to automatically compute amounts.

Budget population module 96 provides extract process 92 which is a powerful selection facility to specify data to be extracted for EAS or the budget and planning system of the present embodiment. Selection criteria may range from general selection to pinpointing specific identifiers. Ledger population module 96 may perform roll-up along hierarchy lines to consolidate actual data to the desired budgeting levels. Direct move, period-over-period, and consecutive interval population methods, as those terms are described herein, are also supported. Different annualization methods may be specified for

interval conversion. Extracted data is received for various resources and budget population module 96. Also, interval conversion is performed when necessary to consolidate or expand reporting periods. In budget population module 96, growth assumptions are defined and applied to extracted data and the budget is populated with initial values. Moreover, new business is computed based on existing balances and user-defined target balances.

The present budget and planning system provides several budget population techniques used in the projection of current and planning year budget values. The budget population process if further enhanced by the ability to apply growth assumptions that increase or decrease extracted balances by fixed amounts or percentages. Once the initial values are populated, the budget is available for modification.

During the operation of budget configuration module 98, a budget profile is established to define the characteristics of a budget. The budget profile also provides the ability to select or define the organization, product, and customer hierarchies to be used in the budget process. Facilities are provided to define interest rate scenarios, to compute interest and funding amounts with equations, to budget amounts linked with specific formulas, and restrict access to the budget.

Historical information to provide the foundation for budget development can be extracted from EAS, from other budgets within the present budget and planning system, or provided from other source systems such as general ledger, salary planning, or fixed assets.

Budget data can be manipulated on-line using BPS workstations or off-line through Lotus 1-2-3® or Microsoft Excel® spreadsheets. Calculation of interest,

funding amounts, and amounts tied to formulas can be performed on-line or in batch. Funding center offsets are created and, if desired, entries are created to balance the budget balance sheet for each company and posted to user-defined identifiers.

BPS ledger module 100 is a primary source of the present system's power and flexibility. For example, using BPS ledger module 100, budget data is stored in a series of entries in a table. Each entry in the table is related to a specific budget identifier. Each entry in the table contains from one to twelve amounts, depending upon the interval defined for the budget year. With BPS ledger module 100, each entry is identified as either monetary or statistical. Each entry identifier includes the budget identifier to which the entry applies, the year to which the entry applies, the company identifier to which the amount is assigned, and the unit identifier of the organization within the company to which the amount is assigned. In addition, each entry identifier includes a product identifier of the product and the customer identifier of the customer to which the amount is assigned. The amount identifier that describes the amount relates the amount to a description line used in reporting. Note that all identifiers are provided for each entry to BPS ledger module 100.

Budget modification module 104 provides on-line facilities for budget modification through a workstation such as workstation 12 of FIGUREs 1 through 3, above. The on-line facilities that budget modification module 104 provides include entry or adjustment of budget values by a percent or monetary value, as well as modification of data at the detail or summary level. Summary level modification is made at a selected summary point and applied to all subordinates. Ledger modification module 104 permits data to be modified using spreadsheets. Data

may be extracted from the budget, modified through a spreadsheet, and then uploaded to BPS ledger 192. Forced balancing of balance sheet amounts is performed by the system of the present embodiment based on user-defined balancing identifiers. Out-of-balance conditions may be corrected automatically and reported. Budget modification module 104 also performs linked amounts and net interest margin calculations automatically using on-line and batch facilities. On-line calculation can be disabled, although calculations continue to be performed in off-line processing.

Revenue and expense transfer function 102 allocates selected amounts to organizations, products, and customers. Allocation is based on transfer instructions developed and maintained by the financial institution. Transfer instructions define the organizations, products, and customers to be involved in the transfer, as well as the procedure for calculating transfer amounts. The system of the present embodiment supports two categories of transfer procedure type. First of all, the system supports unit-factor based transfers when the monetary or statistical amount may be directly related to an identifiable activity volume. With unit-factor based transfers, unit factors are determined externally and are entered into revenue and expense transfer function 102 using on-line or batch facilities. For the present embodiment, up to five tiered unit factors may be specified, based on volume levels. Activity volumes are identified by organization, product, and customer. The unit factor is then multiplied by the transaction volume to calculate the transfer amount for each organization, product, and customer.

The other category of transfer type procedure that the present method and system support is allocation transfers. An allocation transfer is used when the

monetary or statistical amount cannot be directly related to an identifiable activity volume. Allocation procedures are established for each transfer function. With the present embodiment, four allocation procedures are provided including (1) allocation of a fixed amount, evenly distributed, (2) allocation of a fixed amount, prorated, (3) allocation of a fixed percent, evenly distributed, and (4) allocation of a fixed percent, prorated. Any monetary or statistical amount on BPS ledger 192 may be specified as the basis for prorated allocations.

Revenue and expense transfer function 102 also supports posting of transfer amounts on BPS ledger 192. A debit or credit is assigned to the organization, product, and customer in posting. An offset credit or debit is sent to a relief amount for the organization, product, and customer to which the amount was originally posted.

Budget distribution module 106 provides on-line reporting that allows budget information to be viewed in balance sheet and income statement formats. Balance sheets, income statements, version-to-version comparisons, and net interest margin reports may be generated in batch upon request, using run-time variables to determine report detail.

The system architecture of the present budget and planning system provides a cooperative processing system, utilizing the capacity of a mainframe relational data store for data collection and storage, and the power of workstations for budget modification and analysis. The flexibility of the present budget and planning system is largely attributable to the structure of BPS ledger module 100 and the use of hierarchies.

Budget release module 108 provides a facility to release budget data to the EAS ledger update function of EAS. Budgeted values are selected by the user for external release. In addition, budget release module 108 may permit roll-up along hierarchy lines to consolidate budget data to the desired actual levels. Moreover, budget release module 108 performs interval conversion when necessary to consolidate or expand reporting periods of budget data to align with actual data.

FIGURE 8 illustrates the hierarchy example 110 typical of that may be used with the method and system of the present embodiment. In particular, hierarchy example 110 includes four levels such as level 01, level 02, level 03, and level 04. At level 01, a company identifier "99" is associated with the unit identifier "CORP." At level 02, company identifiers include "Bank A" and "Bank B." For Bank A, a level 03 hierarchy includes "ABC division" and "DEF Division." The level 04 hierarchy identifiers for ABC Division appears as "Center 1" and "Center 2." At the level 04 hierarchy for the "DEF Division" appears "Center 3." Returning to hierarchy level 02 for company identifier "99" and unit identifier "CORP," Company 2 is shown as Bank B having, at hierarchy level 03, "ABC Division" and "DEF Division." At the level 04 hierarchy for Company 2 appears, "Center 1." For DEF Division, the level 04 hierarchy shows "Center 2" and "Center 3."

Hierarchies play a fundamental role in the budgeting process. They are used to determine the valid identifiers for the budget and the level of detail used to budget each dimension (i.e., organization, product, and customer). Hierarchies also support summarizing data from EAS or the present budget and planning system for posting to BPS ledger 192, as well as from the present budget and planning system for posting to the EAS Ledger.

They provide the ability to apply controls, assumptions, or calculations to a subset of data, and to select a subset of data for population, modification, spreadsheet extract, or for copy. They also create the structure necessary for target balance computations and to dynamically build balance sheets, income statements, and Net Interest Margin reports.

Hierarchies for a budget are specified for organization, product, customer, and amount. The hierarchies determine the level of detail for the organization, product, and customer dimensions. For example, an institution desiring to budget at the cost center level would define a hierarchy that included cost center detail, similar to the following hierarchy.

Amounts may be budgeted at the detail level (the lowest level of the hierarchy that has no subordinates, such as Company 1 — Center 1) or at summary points (identifiers that have subordinates, such as Company 1 — Bank A). Conversely, a dimension can be excluded from a budget by specifying a hierarchy with a single identifier. For example, the customer dimension could be excluded if budgeting by customer is not desired. A customer hierarchy is specified on the budget profile that contains a single identifier representing the top of the hierarchy, similar to the following hierarchy. The Amount hierarchy determines which amounts are to be included in the budget.

Hierarchies not only determine the level of detail used for budgeting, but also determine which identifiers are valid for posting to the BPS ledger 192. Only identifiers included on the budget hierarchies can be used. In the event data is received by the present budget and planning system that contains valid identifiers not found on the present budget and planning system hierarchies, hierarchical roll-up occurs. A

comparison is made between the source hierarchy and the destination hierarchy to find an appropriate substitute for the identifier.

Hierarchical roll-up may also occur when transferring budget or forecast data to EAS. In the event budgeted amounts are posted to identifiers in the present budget and planning system that are not valid on the primary hierarchy, upon release to EAS, those amounts are rolled up hierarchically and posted to an identifier that is valid on the primary hierarchy. Upon finding an identifier that is not defined on the destination hierarchy, the present system locates the identifier on the source hierarchy and validates whether or not its superior reporting identifier has been defined on the destination hierarchy.

If the superior reporting identifier is valid in the destination hierarchy, it is substituted for the original identifier. On the other hand, if the superior reporting identifier is not located in the destination hierarchy, its superior reporting identifier is examined, and so on. This process is repeated until an identifier that is defined on both hierarchies is found, except when applied to the amount hierarchy.

FIGURE 9 illustrates an example of the hierarchy point assignment feature of the present embodiment. In FIGURE 9, hierarchies include organization hierarchy 120, product hierarchy 122, customer hierarchy 124, which in this case is simply all customers, and amount hierarchy 126. Each hierarchy in the hierarchy point example of FIGURE 9 may include between one and four levels. For example, organization hierarchy 120 includes three levels. The first level is the company identifier "99" with the unit identifier "CORP." At level 02, Company 99 includes line of business or "LOB A" and "LOB B." At hierarchy level 03 under LOB A, organization hierarchy

120 includes for Company 1, "Center 1" and "Center 2." For Company 2, LOB A includes "Center 1." Also at hierarchy level 03, under LOB B, Company 2 includes "Center 2" and "Center 3." For product hierarchy 122, at level 01 are all products with the level 02 hierarchy including "Asset Products" and "liability products." Even more specifically, at level 03 product hierarchy includes loans which at level 04 are even more refined to include retail loans and commercial loans. Customer hierarchy 124, as mentioned, is simply "All Customers." Customer hierarchy, however, may be more refined according to the specific desired results from the present system. Amount hierarchy 126 at level 01 includes "Total assets." At level 02, amount hierarchy 126 includes "Loans." At the even more refined level 03, loans include commercial loans net and retail loans net. Level 04 of amount hierarchy 126 includes commercial loan balance, commercial loan loss residuals, and parts sold.

Hierarchy point assignment, as indicated by FIGURE 9, is an extremely powerful tool that the present embodiment provides to apply rules and controls to multiple identifiers or subsets of budget data. The hierarchy point assignment feature of the present embodiment capitalizes upon the relationships defined in the hierarchies by allowing summary identifiers to be used when defining assumptions, rules and controls. Summary identifiers are identifiers which have one or more subordinates on the hierarchy. Any time a rule or control is used using a summary organization identifier, product identifier, customer identifier, and/or amount identifier, the rule or control is applied to that identifier and all subordinate identifiers on the hierarchy found on BPS ledger 192. This reduces the number of rules, controls or assumptions that must be defined for the budget.

The present embodiment provides hierarchy point assignments for non-global functions and controls such as non-base rates, base point add-ons, ownership, accrual methods, annualization methods, linked amounts, net interest margin equations, growth assumptions, and hierarchical budget maintenance. In addition, summary identifiers may be used in hierarchy point assignments to isolate a subset of data when using features including selection control for population, for spreadsheet extracts, and for inter-budget copying. In addition, revenue and expense transfer instructions may use summary identifiers in hierarchy point assignments to isolate data subsets.

When using hierarchy point assignments, several rules apply. For example, a combination of company or unit, product, customer (and amount, as appropriate) identifiers are specified. Detail identifiers or summary points may be used. Detail identifiers are identifiers which have no subordinates on the hierarchy. If detail identifiers are used for all four dimensions, the rule or control is applied to a single entry on BPS ledger 192. If one or more summary points are specified, the rule is applied to the specified identifier and all subordinates. Note that with the present embodiment, an asterisk may be used in place of that specific identifier to indicate that the rule or control applies to any and all identifiers for that dimension. Also, multiple asterisks may be used. At least one dimension, however, must contain a specific identifier as either a detail or summary identifier.

Returning again to FIGURE 9, the hierarchies and point assignments are specified for the organization as "Company 9" and "LOB A," for product as "commercial loans," for customer as "All Customers," and for amount as "Commercial Loans Net." If the growth assumption was

defined to increase commercial loans for LOB A for all customers by five percent, the growth assumption is applied to any amounts found on BPS ledger 192 which meet the criteria specified above using the hierarchies defined for the budget. If an all-inclusive asterisk was entered for the organization identifier, amounts for commercial loans net, commercial loan balance, commercial loan loss residual, and parts sold would be increased by five percent for all organizations. Thus, one rule or control can be applied to thousands of budget entries.

The hierarchy point assignment example of FIGURE 9, therefore, illustrates the power of assigning controls using hierarchical summary points. Moreover, in the event of conflicts due to multiple controls being defined which include the same identifiers, an overriding sequence is provided. The overriding order is, therefore, (1) customer, where any control specified at the customer level overrides controls specified by product, organization or amount; (2) product, where control specified at the product level overrides controls for organization and amount; (3) organization, where any control specified for the amount is overridden; and (4) amount.

FIGURE 10 shows a flow diagram 98 depicting the relationships and operation of budget configuration module of the present embodiment. Budget configuration module 98 performs essential steps of budget configuration phase 32 of the present embodiment. For the present discussion, the budget configuration module and flow diagram shall be referred to using reference numeral 88. In flow diagram 98, budget profile module 128 receives on-line entry and hierarchies from MSS hierarchies 130. Budget profile on-line GUI 128 creates budget profile 132. Budget profile 132, by on-line entry, goes to basis point add-ons module 134. Base

rates module 136 associates via on-line or batch entry with budget profile 132, as well as with basis point add-ons module 136. Base rates 138 come from base rates module 136. Other outputs from base rates module 136 include batch edit rate exceptions report 140 and rates 142. Basis point add-on report 144 comes from basis point add-ons module 134. Non-base rates module 146 receives on-line or batch entry of budget profile 132 to produce non-base rates report 148. Rates 142 associate with net interest margin module 150 which also receives on-line entry. Net interest module 150 provides net interest margin parameters report 152 and net interest margin parameters 154.

Also in FIGURE 10, linked amounts module 156 receives MSS hierarchies 130 to produce linked amount formulas report 158. MSS hierarchies also go to growth assumption module 160 to produce growth assumptions report 162. Target balance groups module 164 and budget control parameters 166 also receive MSS hierarchies and on-line entry. Ownership module 168, accrual method module 170 and annualization module 172 receive MSS hierarchies 130 and on-line entry to yield ownership and methods report 174.

Budget profile module 128 creates and maintains characteristics for a budget. Creating a profile is the first step in of budget configuration module 98. A budget profile must be defined before data can be entered or assumptions and controls can be associated with the budget.

The budget profile contains the budget name and description, including years and intervals, hierarchy structures, the owner, the update availability, the calculation options, and the audit control option. Each budget is assigned a user-defined name and description. The budget name, or budget identifier, is used to associate all information to the budget.

Budget durations from one to five years are supported. The number of years and starting year are specified. If more than one year is specified, years are considered to be contiguous. In addition, the interval for each processing year is identified. Different years may have different intervals. Intervals available for selection are monthly, quarterly, semi-annual, and annual. Edits within the system ensure each year is defined as a valid processing year through the MSS Reporting Period definition and that the frequency of the budget intervals does not exceed the frequency of reporting periods defined for the processing year in MSS.

As part of the budget profile, a hierarchy structure is identified for Organization, Product, Customer, and Amount. Hierarchies play a fundamental role in the budgeting process. They are used to determine the valid identifiers for the budget and the level of detail used to budget each dimension (Organization, Product, and Customer), provide the ability to apply controls, assumptions, or calculations to a subset of data and the ability to select a subset of data for population, modification, spreadsheet extract, or for copy, and to summarize data from EAS or the present budget and planning system for posting to BPS ledger 192. They also are used to create the structure necessary for Target Balance computations and to dynamically build balance sheets and income statements.

The budget profile also contains several control features to aid in managing the data related to a specific budget. Specifications of an ownership code limits access to a budget. This code is used by security to verify access authority. If an owner code is not assigned, all authorized users have access to the budget.

Budget configuration module 98 documents the basic decisions that are made early in the development of a budget or strategic plan. The decisions that budget configuration module 98 supports include basic assumptions and rules to reflect the bank's policies and strategic plans, the duration of the budget and the dimensions and level of detail to be used. Decisions relating to projection assumptions and access to restricted reporting periods is also supported by budget configuration module 98. Equations to compute amounts calculated from other amounts and interest and funding amounts are also supported by budget configuration module 98. The decisions that are captured during the budget configuration phase support the system processing performed in the remaining portions of budget cycle 30 including population phase 34, modification phase 36, and distribution phase 38.

During the operation of budget configuration module 98, the user defines budget assumptions and rules used for controlling, calculating, and reporting budget values. The definition of the level of detail to which amounts are budgeted includes the selection of the organization, product, customer and amount hierarchy structure. The hierarchies are used to dynamically build reports and to allow multidimensional views for on-line and batch reports. Definition of ownership of budget data also occurs in budget configuration module 98. Identification of budget amounts which are dependent upon other amounts or volumes and definition of the formulas

to be used occurs within budget configuration module 98. Growth assumptions reflecting management's expected growth or decline based on known factors or strategic goals also occurs during the processing of budget configuration module 98. These are applied to the base budget amounts during the working budget population process. For example, a growth assumption may include the desire to expand a mortgage loan portfolio by 15%, close a particular unprofitable branch in six months, or reduce data processing costs by $500,000 per year due to an outsourcing contract.

Budget configuration module 98 also provides for specification of components that compute funding costs, interest income and expense, and net interest margins. For funding calculations, controls are defined including the specification of amount identifiers that will cause interest income and expense and funding calculations to be done. The development and maintenance of interest rate forecast by budget and the definition and maintenance of basis point add-on amounts associated with base rates are specified in budget configuration module 98. Moreover, determination of the accrual method used to determine the number of days in the period and the year for calculation occurs during the processing of budget configuration module 98. With this information, desired levels of business are defined by specifying target balances for particular portfolio balances such as commercial real estate loans. These definitions support the calculation of incremental balances for asset, liability or equity balances.

A budget may also need to be controlled at different levels throughout the development process. For example, it may be desirable to restrict access to a controlled central group while assumptions are being made during the Budget Configuration phase. During the Budget

Modification phase, when many users are entering data, the budget should be available for general use. After the budget is finalized, it may be necessary to lock the budget from any modification. A budget availability indicator is provided to allow access to the budget to all users, select users, or no users.

The present budget and planning system provides on-line, real time calculations for linked amounts and the interest and funding amounts for Net Interest Margins. It may not be desirable to perform these calculations on-line during all phases of budget preparation. An indicator is provided to select whether or not these calculations are performed on-line. Calculations occur in batch, regardless of the setting.

The rate and basis point add on process of the present embodiment includes the definition of rates and basis point add ons to support Net Interest Margin or NIM calculations. Some NIM calculations require the use of a base rate, others require the use of a base rate plus a basis point add on and others require the use of a non-base rate. Base rates, such as Prime and LIBOR, are specified at the institution level. Non-base rates, such as actual yields/rates, are specified at the detailed level of Organization, Product, Customer, and Amount.

Budget rates data store 142 maintains and controls base rates and non-base rates. Basis point add on data store maintains and controls basis point add ons. When non-base rates and basis point add ons fall into groups or categories, they can be defined for specific identifiers through hierarchy point assignment. This facility accommodates definition by entry of an asterisk to indicate all occurrences of a dimension, a roll-up point to include all identifiers related to that roll-up point, or specific identification at the lowest level.

Base rates 136 may be adjusted up or down by the addition of basis point add ons. A NIM calculation specifies the use of a base rate. This calculation uses the base rate without adjustment unless a basis point add on has been identified either specifically or through inherited definition for the Organization, Product, Customer, and Amount.

When a non-base rate is selected for use in a NIM calculation, a search is made for a non-base rate to be applied to the Company, Unit, Product, Customer, and Amount involved in the search. If a non-base rate matching these criteria cannot be located, either from specific or inherited definition, the result of the calculation is zero. When this condition is detected in batch, an error is reported on the Automatic Calculation Exceptions report (at reference numeral 200 in FIGURE 11).

Base rates and non-base rates are created and maintained using on-line or batch facilities. Base rates are identified by rate identifier and Budget identifier. Non-base rates are identified by rate identifier, Budget identifier, and identifiers for Organization, Product, Customer, and Amount.

Rates are added to both the budget rates and the Basis Point Add On data stores by reporting period using on-line facilities. If the rate to be entered is the same for all reporting periods, a facility is provided to enter the rate once and have it apply to all reporting periods. For individual application of rates to reporting periods, a list is produced of all valid reporting periods to which rates can be applied. The reporting periods are displayed from the MSS Reporting Period definitions for all processing years in the budget.

Rates may be changed even though the rate identifier to which they belong is used in a NIM formula. A recalculation feature is available that automatically recalculates all formulas using a new rate when the rate is changed. Once a rate identifier has been referenced by a NIM formula, it may not be deleted from the budget rates data store without first changing the formula to reference a different rate identifier. In addition, once a rate identifier has been referenced by a Basis Point Add On entry, it may not be deleted from the budget rates Data Store without first changing the Basis Point Add On reference.

Base rates are used at the institution level. Non-base rates are specific for an Organization, Product, Customer, and Amount combination. Basis Point Add ons are related to a base rate and are defined for specific identifiers through hierarchy point assignment.

Net Interest Margin feature 150 is used in a NIM calculation to create budget amounts for interest accrual and funding amounts. These calculations are performed in batch any time the balance, rate, or basis point add on used to produce the calculation changes, except in those instances where periods of a budget have been protected. In these cases, calculations are disabled on-line and in batch. On-line calculation is controlled by the CALCULATION option on the "Budget Profile" window. In addition, an automatic offset entry for the charge/credit for funding is created in batch based upon Net Interest Margin definitions. NIM parameters report 152 indicates the BUDGET ID, Amount ID COMPANY, UNIT, PRODUCT, CUSTOMER, all charge/credit for funds, and interest income and expense parameters and is available upon request.

The present embodiment also performs linked amount calculations to define the creation of a budget amount that is based on another budget amount and cannot be changed by batch or manual modification. On-line calculation is controlled by the CALCULATION option on the "Budget Profile" window. The linked amount is recalculated in batch whenever the base budget amount changes, or when the formula used to calculate the linked amount changes, except in those instances where periods of a budget have been protected. In these cases, linked amounts are disabled on-line and in batch.

FIGURE 11 shows processing flow for budget ledger update module 100 of the present embodiment. As FIGURE 11 depicts, EAS input 88 and budget and planning system input 84 go to budget population process module 96. Budget population process module 96 also receives input from data staging facility 86 and application extracts 182. Output from budget population process module 96 goes to BPS ledger update module 184. BPS ledger update module 184 receives input from revenue and expense transfers 102 and budget control parameter 166. In addition, spreadsheet upload module 186 provides input to BPS ledger update module 184. Output from BPS ledger update module 184 includes audit journal by source 188 and BPS posting exceptions report 190. Also, BPS ledger update module 184 updates BPS ledger 192. BPS ledger 192 also receives outputs from hierarchical ledger maintenance module 194 and ledger detail module 196. Hierarchical ledger maintenance module 194 may receive on-line or batch entry. BPS ledger 192 communicates with recalculation module 198 and produces automatic calculations exceptions report 200.

BPS ledger module 100 is a primary source of the present system's power and flexibility. BPS ledger module 100 contains the detail level budget information.

Within BPS ledger module 100, budget data is stored in a series of entries in a table. For illustrative purposes, BPS ledger 192 may be viewed as a table made up of columns and rows. The rows are known as entries, where each entry consists of columns containing amounts or identifiers describing these amounts. Each ledger entry has the following identifiers: (1) a budget identifier to which the entry applies, (2) the year to which the entry applies, (3) a company identifier to which the amount is assigned, (4) the unit identifier of the organization unit within the company to which the amount is assigned, (5) the product identifier of the product to which the amount is assigned, (6) the customer identifier of the customer to which the amount is assigned, and (7) the amount identifier that describes the amount. Each entry in BPS ledger 192 may contain from one to twelve amounts, depending upon the interval defined for the budget year. Moreover, the number of columns used depends on the number of reporting periods defined for a year. For example, a budget using monthly intervals has twelve amount columns for each row entry. On the other hand, a budget using quarterly intervals has four entries, whereas a budget using semi-annual intervals has only two. Each entry is identified as either monetary or statistical. A value is provided for each identifier with adding or updating entries on BPS ledger 192.

FIGURE 12 shows budget population flow diagram 96 wherein EAS/BPS population extracts selection module 210 may receive inputs via on-line entry. EAS/BPS population extracts selection module 210 produces extract requests 212 that go to extract process 92. Extract process 92 also associates with EAS 88 and BPS 84. No output from extract process 92 goes to interval conversion module 214. Interval conversion module 214 may receive application extracts 182 and input from data

staging facility 86, as well as translated interface data 216. Application extracts 182 and data staging facility 86 also associate with identifier translation module 218, which provides an input to currency translation module 220 to generate translated interface data 216. Together indentifier translation module 218 and currency translation module 200 form translation control module 94. Interval conversion module 214 and growth assumptions 160 associate with budget projection and population module 222. The output from budget projection and population module 222 goes to BPS posting module 198. Output from BPS posting module 198 includes BPS Audit Journal by Source report 188 and BPS Posting Exceptions report 190. BPS posting module 198 also provides input to BPS ledger 192. Output from BPS ledger 192 associates with budget modification module 104.

Budget population phase 96 may be performed from a single source or multiple sources, and it may be run multiple times. Budget population process 96 includes the functions of (1) population control parameters definitions, (2) population extract, (3) roll up, (4) identifier translation, (5) currency translation, (6) integral conversion, and (7) budget population and projection. After a draft or working budget is populated and projected, the present system hosts the working budget to BPS ledger 192 to permit modification.

EAS/BPS population extract selection module 210 performs the functions of population configured definitions and population extract requests as well as roll up according to hierarchical structures. Population phase of budgeting requires definition of the population methods to be used, growth assumptions to be applied to the budget data, and target balance group definitions that are to be created. Population extract requests define what EAS/BPS data will be transferred to the

budget. The controls include the selection of EAS/BPS periods, categories and identifiers to be transferred and the definition of a decimation budget and period. With EAS/BPS population extract selection module 210, data is accumulated from a detailed to a summary level, if required, by comparing source and destination hierarchy structures.

Identifier translation module 218 processes application extract data which is not identified with budget key identifiers or organization, product, customer, or amount. Currency translation module 220 processes application extracts which contain currency amounts not stated in the base currency of the budget. Interval conversion module 214 converts data from EAS/BPS, data staging facility, and application extracts from the source interval to the BPS destination interval. Furthermore, budget projection and population module 222 projects values for budget data based on chosen population methods, growth assumptions, and target balances groups. Selected data uses may be tailored to fit specific requirements. A single source period and a range of destination periods may be used in conjunction with the population method, growth assumption, and target balance group definition to repair unique population data.

Population methods of budget population phase 96 are used when initial data is transferred into the budget system. These methods facilitate projection of amounts for the remainder of the current year in preparation of initial population values for one or more future years. Population process 96 transfers data from the specified source periods to the specified destination periods. All source destination periods are related to a selected budget. Three populations that the present embodiment provides include a direct move for (1) moving from a

single EAS period to a range of budget and planning system periods, (2) from a range of EAS periods to a range of budget and planning system periods, (3) from a single budget and planning system period to a range of budget and planning system periods, and (4) from a range of budget and planning system periods to a range of budget and planning system periods. Another population method, the consecutive intervals method permits (1) moving the amount from the source period specified to the first destination specified, (2) moving the amount populated in the first period to the second period and adjusting the second period with any growth assumption specified for that destination period, and (3) continuing in a current mode until all destination periods have been populated. Yet another method called the period-over-period population method includes facilities that are identical to the facilities under the direct move method. If the period-over-period population method is selected, growth assumptions will search for adjustments identified for the company, unit, product, customer, and amount identifiers involved in the population. If a growth assumption is encountered, each period is adjusted by the defined growth assumption percent or amount. On the other hand, if no growth assumption is encountered, the period-over-period method functions like the direct move method.

With the present embodiment, the population method to be used is determined in one of the following ways. A population method may be specified for each extract using a population extract user interface. On the other hand, external application data provided to the present system's population process may include the specification of a population method. On the other hand, a system default population method of period-over-period is provided.

The use of growth assumptions provides numerous capabilities for the present system. For example, growth assumptions assist in establishing the initial values of a working budget. They allow management business assumptions to be applied to existing information. Growth assumptions are applied only during budget population phase 96. Therefore, associated calculations are not done on a recurring basis each time budget data is modified. Growth assumptions are used to increase or decrease a populated amount. The present system operates so that one growth assumption may be specified and applied to many BPS ledger 192 entries during system operation. The present embodiment provides reports that are available on request to provide a detailed listing of budget identifier of all defined growth assumptions.

In addition, growth assumptions definitions provide the ability to adjust growth assumptions by a fixed amount. It is possible with the present embodiment to increase or decrease the populated value with adjustments applied to one, all or selected periods. A definition for one ledger entry or for multiple ledger entries are permissible for growth assumptions using the hierarchy point assignment feature of the present embodiment. Moreover, growth assumptions definitions may be created and maintained on-line.

Interval conversion module 214 may operate as data is used to populate the present system and also when the final budget data is extracted. If the data being brought into the present system is for a different length of time than the interval for which the budget is defined, interval conversion module 214 operates to convert the data to the proper interval. For example, if the data coming in is quarterly data while the desired budget is monthly, interval conversion module 214 divides

the incoming data into three monthly amounts to form monthly data.

Extract process 92 selects and extracts data from the specified source system in preparation for population and projection of the data into BPS ledger 192. Population extract requests 212 have the following definition capabilities with the present embodiment. It is possible to define the information to be extracted and populated as well as multiple extract requests. Extract requests may be created, deleted, and maintained on-line with a list of existing population extract requests 210 ready for review.

Budget projection and population module 222 applies the assumptions made about growth projections and target balances to the data that was extracted from the source systems and prepares it for posting to BPS ledger 192. The budget projection process of budget projection and population module 222 involves the functions of applying population methods, applying growth assumptions, and calculating and processing target balances. The parameters which define the budget population and projection may be determined during budget configuration phase 32.

With the present embodiment, the processing of populations and application of growth assumptions is interrelated. The population method and growth assumptions are applied to the extracted source data to determine the initial working budget values for the different periods of data. These calculated values may be involved in additional target balance group calculations or directly posted to BPS ledger 192.

Basic rules for processing include, first of all, if no population method has been defined and if growth assumptions exist, the period-over-period population method is applied. If no growth assumptions exist, the

direct move population method is applied. If there is a conflict between the population method and the growth assumption defined, the population method overrides. Moreover, if the consecutive intervals population method has been selected, only a single period of source data is used. However, interval conversion process 214 must be considered before data is selected. For example, if the source interval is monthly and the destination interval is quarterly, the conversion of quarter data takes place before a single period of data is selected. Even if the source specifies a range, the present system uses only the periods required to create a single destination interval.

FIGURE 13 shows budget modification phase 104 flow diagram. In the flow diagram for budget modification phase 104, on-line entry provides input into revenue and expense transfer (RET) processing and control module 226, manual data modification module 228, and spreadsheet extract request module 230. MSS hierarchies 130 permits edits to RET processing and control module 226 and manual data modification module 228. RET processing and control module 226 generates RET instructions 234 that go to RET processing module 236. RET processing module 236 provides inputs to BPS ledger 192. Spreadsheet extract request module 230 provides input to spreadsheet download module 238 which receives BPS ledger 192 input for producing spreadsheet data 240. Changes may be made through Lotus 1-2-3®, Microsoft Excel® or a similar spreadsheet program. Spreadsheet data 240 goes to spreadsheet upload request module 242 for providing input back to BPS ledger 192. BPS ledger 192 also receives input from balancing process module 244, funding process module 246 and communicates with automatic calculation process module 248.

On-line entry provides input to balance sheet balance control module 250 for generating balancing control data 252. Balancing process module 244 receives balancing control data 252 and, as well as providing input to BPS ledger 192, generates Balance Sheet Balancing Control report 254. On-line entry also goes to funding control module 256. From funding control module 256, funding control data 258 is produced for receipt by funding process module 246. Funding process module 246 produces Budget Funding Control report 260 as well as input to BPS ledger 192. Automatic calculation process module 248 receives budget profile data 132 as well as budget control data 166 to produce an input to BPS ledger 192 and automatic calculations exceptions report 264.

For the present embodiment, detailed modification of data, therefore, occurs after the budget has been initially populated and reviewed in budget modification module 104. The responsibility during budget modification process 104 often changes from an essentially controlled environment to a distributed environment. Changes may be made by cost center managers or others who are familiar with a lower level of budgeting detail.

The processes of budget modification process 104 are repetitive. Changes are made, reports are produced, the budget is reviewed and changes are made again. Budget modification process 104 is repeated until the budget is finalized and approved. To aid in this process, several facilities are provided for data modification. The present embodiment includes two manual modification facilities 228 that enable users to make changes to existing values or add additional amounts to the budget. For example, detailed modification allows the values to be changed from one ledger row for a specific organization, product, customer and amount. In addition,

high-level modification allows changes at a roll up point to be automatically applied to subordinates.

Another facility of the present system is the batch reporting facility that may associate with the present embodiment for downloading data from BPS ledger 192 as spreadsheet download module 238 indicates. Once changes have been made to a spreadsheet, spreadsheet upload request module 242 uploads the updated amounts to BPS ledger 192 to replace values. Moreover, with the present embodiment, the allocation of overhead items and unit costs may be executed through the RET facility as indicated by RET processing and control module 226.

Automatic calculation process module 248 is executed using on-line or batch facilities. This process causes all amounts tied to formulas, such as linked amounts or amounts dependent on other calculations, to be recomputed so that up-to-date information may be viewed on reports or through on-line inquiry facilities during data modification process 104.

During the final phase of budget modification process 104, the functions of balancing process module 244 and funding process module 246 are provided to prepare the budget for budget distribution phase 38 (see FIGURE 3). Both functions may be executed at any time, but would normally be used only during the final phase of budget development. Balancing process module 244 provides a force balancing feature that insures that debits equal credits for all balance sheet amounts for each category within the budget. If necessary, a balancing entry is created based on user-specified balancing control definitions. Funding process module 246 generates funding center offsets for charge/credit amounts computed through the auto-calculation feature for net interest margin (NIM) formulas. Funding charge/credit offsets are generated during an off-line

process based on user-defined funding control definitions.

Automatic calculation process 248 provides the ability to keep current those budget values that are based solely upon other budget values. Automatic calculations defined for the budget process of the present invention are of two types, including linked amounts and net interest margin calculations. For the present embodiment, if multiple links or NIMs have been specified for a particular organization, product, or customer, there is an override order rule that applies. For the customer identifier, any controls specified at the customer level override controls specified for product, organization, or amount. At the product level, any specified controls override controls for organization or amount. For the organization level, any specified control for amount is overridden.

FIGURE 14 shows flow diagram 270 to depict the budget modification through spreadsheets feature of the present embodiment. In flow diagram 270, batch extract request module 272 provides an input to batch spreadsheet extract processing module 274. Batch spreadsheet extract processing module 274 receives input from BPS ledger 192. Batch spreadsheet extract processing module 274 provides an optional output of MSS report results 276 and spreadsheet extract data set 278. By on-line entry, the MSS report results may go to spreadsheet selection/download module 238. Spreadsheet extract data set 278 associates with host download non-EMS process module 280. The result is spreadsheet-delimited personal computer file 282. Spreadsheet-delimited personal computer file 282 goes to BPS budget spreadsheet template module 284 for generating standard-delimited personal computer upload file format 286, which goes to spreadsheet upload request module 242 and, optionally, to

manual file upload process module 288. Spreadsheet upload request module 242 also is performed on-line to produce spreadsheet upload control information 290, a part of which also comes from batch host data set spreadsheet processing module 292. Batch host data set spreadsheet processing module 292 receives input from manual file upload process module 288. Spreadsheet upload control information goes to spreadsheet preprocessing module 294. Spreadsheet pre-posting process module 294 generates Spreadsheet Upload Statistics report 296 and an input to BPS population posting module 198. BPS population posting process 298 provides output to BPS ledger 192 as well as to Audit Journal by Source report 198 and BPS Posting Exceptions report 190.

Process flow diagram 270 indicates that the detailed modification of data occurs after the budget has been initially populated and reviewed. Changes may be made by cost to center managers or others who are familiar with a lower level of budgeting detail.

Because of the spreadsheet capabilities that the present system provides, bank personnel doing budget work in a distributed environment may make the detailed changes on a spreadsheet tool such as Lotus 1-2-3® or Microsoft Excel® on which they are already trained. There is no need for them to be familiar with the Windows capabilities that the present embodiment provides, or for them to have the budget and planning system of the present embodiment on their individual personal computers. New budget information may be added to spreadsheets and posted to BPS ledger 192 using this form of processing. As flow diagram 192 indicates, therefore, spreadsheet capabilities that the present embodiment provides include (1) extraction of data from BPS ledger 192, (2) downloading extracted data to a spreadsheet

program such as Lotus 1-2-3® or Microsoft Excel®, (3) modification of the spreadsheet data using standard spreadsheet tools, (4) uploading modified data into a spreadsheet, and (5) posting the spreadsheet data to BPS ledger 192.

When measuring the profitability of an organization, product, or customer, it is important that the present system accurately reflect revenues, expenses, and balance sheet data associated with the respective entity. The data that the present system receives often comes from general ledger applications that may present data in a summarized form not identified with organizations, products, or customers, it is necessary to realign some of the data to derive the organization, product, and customer views desired for profitability reporting. To this end, the present embodiment includes a revenue and expense transfer or RET function that reassigns selected revenue, expense, balance sheet, and statistical amounts to specified organizations, products, and customers based on transfer instructions established by the user.

FIGURE 15 shows RET program flow designated with reference numeral 102. As flow diagram 102 indicates, MSS hierarchies 130 provide hierarchies to RET inter-company parameters set-up maintenance module 300, reporting periods to transfer processing parameters set-up/maintenance module 302 and company identifiers and hierarchies to set/instructions set-up/maintenance module 304 and RET set/instruction processing module 306. On-line entry permits input to RET inter-company parameter set-up/maintenance module 300, transfer processing parameters set-up/maintenance module 302, and set/instruction set-up/maintenance module 304.

Set/instruction set-up/maintenance module 304 may also receive batch entry. RET inter-company parameters set-up/maintenance module 302 provides inter-company

entry identifiers to inter-company transfer parameters 308 which go to RET set/instruction processing module 306. Transfer processing parameters set-up/maintenance module 302 also receives set identifiers from transfer set/instruction data base 310 and provides transfer control identifiers and set sequences to transfer processing parameters 312. Set/instruction set-up/maintenance module 304 produces RET maintenance journal 314, RET set/instruction exceptions report 316 and RET set/instruction listing 318, as well as provides set identifiers and instructions to transfer set/instruction data base 310.

RET set/instruction processing module 306 receives inter-company transfer parameters 308, company identifiers and hierarchies from MSS definition and relations 302, control identifiers to be processed in set sequences from transfer of processing parameters 312, selected monetary and statistical amounts from EAS ledger 88, transfer set/instruction data base 310, and selected monetary and statistical amounts from BPS ledger 192. RET set/instruction processing module 306 produces RET exception reports 320 and provides inputs to EAS generation of posting input module 322 and BPS generation of posting input module 324. EAS generation of posting input module 322 produces RET posting journal by organization report 326 and RET posting by journal instruction report 328. Optionally, EAS generation of posting input module 322 may produce RET-FTP activity journal 330, RET-FTP audit journal 332 and FTP allocated balances file 334 for subsequent FTP processing by the EAS system. Also, EAS generation of posting input module 322 provides posting input records and EAS ledger updates to EAS RET billing file 336.

BPS generation of posting input module 322 produces RET posting journal by organization 338 and RET posting

journal by instruction 340. BPS generation of posting input module 324 produces BPS generated input 344 for updating BPS ledger 192 and optionally provides input to BPS RET billing 342.

With RET functions, transfer instructions define the organizations, products, and customers to be involved in the transfer, as well as the procedures to be employed in calculating transfer amounts. The present embodiment includes two types of procedures including (1) unit-factor based transfer or (2) allocation transfer.

A unit-factor based transfer procedure is used when the balances to be transferred can be directly related to a quantifiable activity volume. Under this method, unit factors such as cost or prices, are predefined and maintained for the provider of each activity. The data is stored as statistical or monetary entries on EAS ledger 88 or BPS ledger 192 and may be manually input through the EAS ledger update or captured through an automated interface. These volumes are identified with the organizations, products, and customers that use the activity. The transfer procedure takes each volume of data and multiplies it by the unit factor to calculate the transfer amount to be assigned to the user organization, product, and customer.

RET function 102 supports unit-factor based transfers under any costing methodology including standard, actual, or average actual cost. The unit factors are determined externally to EAS or BPS and are entered and maintained through RET function 102. A single unit factor may be defined to apply to all volumes for particular activity, or tiered factors may be specified for up to five levels of user activity volume with the present embodiment.

The allocation transfer procedure of RET function 102 is used when the amount to be transferred cannot be

directly related to a quantifiable activity volume. Under this method, a fixed amount, a fixed percentage or a prorated amount or percentage of the specified amount may be directly transferred to the appropriate organization, product, and customer. Any monetary or statistical amount on BPS ledger 192 may be specified as the basis for prorated allocation.

After a transfer amount is calculated using a unit-factor based or allocation procedure, the organization, product, and customer to which the amount is assigned is credited or debited on BPS ledger 192, and the offsetting relief debit/credit is sent to BPS ledger 192 for the organization, product, and customer to which the amount had been posted originally.

For EAS, RET function 102 supports single-stage, as well as multiple-stage transfers. Multiple-stage transfers involve transferring an amount from the initial provider through an intermediate user, or several intermediate users, to the final user organization, product, and customer. In EAS, this process is automatic, as EAS ledger 88 is updated at the end of each transfer set. In BPS, the multi-stage transfer process is not supported because BPS ledger 192 is updated at the end of BPS transfer processing, not at the end of set processing.

Inter-company transfers are also supported using the concept of inter-company clearing accounts. The RET billing file 342 feature allows the details of each successfully processed instruction to be captured and stored for each reporting period. This information may be used to generate customized reports to meet each client's specific needs.

Note that for EAS generation and posting input module 322, the optional FTP allocated balances file 334 feature allows specified balances created during a

successfully processed transfer to be sent to funds transfer pricing module of EAS for processing.

For the following discussion, the term ledger may either refer to either EAS ledger 88 or BPS ledger 192, as appropriate. When a specified ledger is referenced, the terminology will be specifically EAS ledger 88 or BPS ledger 192. Returning to FIGURE 15, transfer instructions are predefined and grouped into sets by the user. Set identifiers are established on-line through a transfer set window in the present embodiment. Transfer instructions may be entered on-line through the transfer instruction window. However, as set/instruction set-up/maintenance module 304 indicates, set identifier and instructions may also be entered in batch mode. Additionally, transfer sets and instructions may be flagged to be retained on the RET set/instruction data store. Transfer sets and instructions that are not retained on the data store are only executed once. Transfer sets and instructions that are retained on the data store may be executed as often as required.

When RET set/instruction processing module 306 operates, transfer sets to be executed are processed sequentially. During processing, the ledger is accessed to obtain values required by each transfer instruction within the set. Processing for each transfer instruction includes calculating transfer amounts and determining "relief" and "to" entries for EAS generation of posting input module 322 and BPS generation of posting input module 324. Exception processing is also done at this time. RET set/instruction processing module 306 may also be operated in edit-only or edit-and-post mode.

EAS generation of posting input module 322 and BPS generation of posting input module 324 create "relief" and "to" posting records to be sent, respectively to the EAS ledger update or BPS ledger 192 update functions for

posting to the appropriate ledger. Monetary posting records can also involve inter-company transfers. If the company identifier for a "to" entry as different from the company identifier for the "relief" entry, two additional posting entries are created by the system of the present embodiment for inter-company transfers. First, a posting entry for the relief company's inter-company receivables amount identifier for the transfer amount calculated, and a posting entry for the "to" company's payables amount identifier for the same amount.

If the RET billing file option is selected for processing, all transfer transactions generated during the transfer set/instruction processing 306 operation in edit-and-post mode are used to create EAS RET billing file 336 or BPS RET billing file 342. Entries to the appropriate RET billing file are generated only for instructions that were successfully processed. Each debit and credit entry contains the details of the RET instruction, the elements used to determine the transfer amount, posting information, amount category code, and an indicator used to determine whether the entry should or should not appear on customized RET billing reports.

Additions to the RET billing file are made each time the transfer set/instruction processing function 306 is executed with the RET billing file option, thereby providing a collection of entries for each reporting period in the event transfer set/instruction processing is run multiple times within the same reporting period.

For EAS, transfer of set posting records are forwarded to the EAS ledger update function at the completion of processing for each transfer set. Thereafter, posting occurs. For BPS, transfer set posting records are accumulated in the BPS generated input file 344 at the completion of processing. These records span the from/to reporting periods specified by a

BPS control identifier. At the end of RET processing, like keys are aggregated and are forwarded to BPS ledger 192 update using the BPS generated input 344.

RET inter-company parameter set-up/maintenance module 300 supports inter-company transfers of monetary amounts by pre-establishing the inter-company transfer posting entry identifiers for each company sending or receiving transfers. EAS and BPS share the inter-company parameters in the present embodiment. This is accomplished through the inter-company parameters window that either facility provides.

With the present embodiment, a primary window and its related secondary windows are used in defining transfer sets and instruction. A primary window and its related secondary windows establish transfer steps for processing. The transfer instruction window and its related windows are used to create each individual transfer instruction within a set. A transfer set identifies a group of related instructions required for transfer amounts. A set is established by entering a set identifier on the transfer set window. The primary use of transfer sets is to support multiple-stage transfers in EAS. A secondary use of transfer sets is to group related transfer instructions to facilitate user review and maintenance. An example of this use is statistical instructions established in one set. While the system of the present embodiment, however, multiple-stage transfers are not supported because the posting to BPS ledger 192 does not occur until the completion of RET set/instruction processing module 306 operation.

The budget and planning system of the present embodiment includes a budget distribution module 106 that supports standard report formats for batch execution reports. The present budget and planning system provides batch summary and detail budget planning results to the

financial institution's budget planners. Customized reporting requirements are handled through the management support system (MSS) batch reporter, or some other client-reporting tool. Maintenance of the present system is reported on standard reports. To explain the budget distribution module 106 of the present embodiment, FIGURE 16 shows the processing flow diagram also designated by reference numeral 106 for the budget distribution function. In response to on-line entry and input from report definitions 352, on-line report selection module 350 produces balance sheet inquiry report 354 and income statement inquiry report 356. Also, on-line report selection module 350 produces report selections and download file 358 which goes to batch reporting generation module 360. Batch report generation module 360 receives input from BPS ledger 192, which also provides input to report selections and download file 358 and budget release and roll-up process 364. Batch report generation module 360 produces average balance sheet 366, income statement 368, version-to-version comparison report 370 and net interest margin or NIM report 372. Budget release and roll-up process 364 receives budget release criteria 374 which comes from budget release control module 376 in response to on-line entry. Output from budget release roll-up process 364 goes to interval conversion process 214 which produces an output for generate posting entries module 378 for generating Budget Release Audit Journal 380 and ELU input file 382.

For the present embodiment, reports can reflect views for different dimensions such as organization balance sheet, a product balance sheet, or a customer balance sheet. The multi-dimensional design of BPS ledger 192 also supports the custom development of user-defined cross views (such as report of product profitability by organization or customer profitability

by the report). The reporting facility includes the ability to request reports that a specific organization, product, or customer hierarchy point and to specify levels of reporting required.

The present embodiment includes an inquiry facility to produce balance sheet inquiry 354 and income statement inquiry 356 in a desired format for a view of selected organization, product, or customer data. Real-time hard-copy reports are available through a spreadsheet product such as Lotus 1-2-3® or Microsoft Excel®.

Batch report generation facility 360 generate high-volume, detail-level, hard-copy reports. Batch report generation module 360 is designed to satisfy financial institution's need for dissemination of budget information to managers who may not have access to the real-time reporting facility. Hard-copy budget reports may be generated by organization, product, or customer hierarchies using batch report generation facility 360. The system of the present embodiment provides a flexible report formatting tool called the MSS batch reporter which allows definition of an unlimited number of batch report formats. Report formats may be grouped for batch processing selection and groups may be retained for future use. Data dimensions including organization, product, customer, and amount are available for use in report definitions. Report detail lines are dynamically built from the amount hierarchy structures. Net interest margin report 372 may be dynamically built using the product hierarchy. System hierarchies, budget plans, and system data stores such as budget rates, are available for BPS batch reporting. The specific report formats are unique to each institution and must be tailored on site. A sample set of BPS batch reports is provided using the method and system of the present embodiment for use in installation testing. The samples illustrate various

reporting views and formatting techniques and may be used as models for custom report development.

Budget release and roll-up process 364 transfers a completed plan to another system as desired, such as EAS to be used as budget or forecast data for profitability reporting. The transfer format for a budget release and roll-up process 364 supports EAS input requirements. Data format requirements for transfer into other systems may be unique to each institution and are tailored during the system implementation.

As budget distribution flow chart 106 indicates, therefore, the present method and system provides a real-time inquiry facility into BPS ledger 192 through a balance sheet inquiry 354 or income statement inquiry 356 that may be viewed and printed. The requestor specifies the budget identifier and year, and the asset, liability, and equity amount identifiers for inclusion in the reports. The amount hierarchy identified to the budget identifier controls the rolls to be presented on the report with detail down to the second level of the amount hierarchy. The inquiry versions on the balance sheet and the income statement are produced for only one selected organization, product, and customer. The one selected combination of organization, product, or customer may represent a summary point, for example.

Report run-time parameters are available in supply job control language for batch production of spreadsheet, balance sheet, income statement, net interest margin, and version-to-version comparison reports. With budget distribution process 106, control parameters such as budget identifiers and budget years, specific structure identifiers for each hierarchy, and variable data for use in a specified standing report may be established as run-time parameters. The supply job control language includes the ability to request reports either at a

specific organization, product, or customer hierarchy point, or at a beginning hierarchy level. The number of levels to be included may be specified, as well as specific amount identifiers required to define lines to be included on the report.

With budget distribution process 106, a report production may be requested at any time by submitting mainframe batch jobs. Batch report generation module 360 performs all data manipulations and calculations and generates formatted input to a print file. Budget release and roll-up process 364 transfers the completed budget plan from BPS ledger 192 to an external system such as EAS or the general ledger. Budget release and roll-up process 364 is initiated through a budget release control window, for example, by specifying such variables as the budget identifier and year for release and the desire of output data type, e.g., budget or forecast. This process creates conversion format posting entries (12 amounts for each year) ready for EAS ledger 88 update processing.

FIGURE 17 shows an example of an organization balance sheet that the present embodiment provides for viewing and printing real time report requests. The present system may use Lotus 1-2-3®, or Microsoft Excel®, or other similar spreadsheet software to produce balance sheets of the type that FIGURE 17 shows. With the present embodiment, an on-line balance sheet may be requested by organization, by product, or by customer. The on-line report is produced for a specific organization, product or customer hierarchy point and displays the budget amounts for budget reporting periods defined within the selected year and total year results. In FIGURE 17, the run date represents the month, year, and time the report was produced and the number of the physical page for the report. The designator "Budget ID

1" indicates the budget identifier selected for this report. The year, "1994," indicates the budget year associated with Budget ID 1. The term "Budget ID 2" indicates the budget identifier selected for comparison and the year, "1996," associates with Budget ID 2. The "hierarchy point" identifies the identity of the organization, product, or customer hierarchy point being reported followed by the description of that particular point. The column descriptions include section headings for assets, liabilities, and equity, one level amount detailed under each of the specified amount hierarchy and system-generated total lines. Budget reporting periods indicate the amount of each budget reporting period in the specified budget year based on the budget interval of the selected budget year as defined in the budget profile. The full year column for the Budget ID 1, which in FIGURE 17 is "ZZBase" is the sum of the Budget ID 1 reporting period aggregate amounts within the Budget ID 1 year, 1995, divided by the number of days in the Budget ID 1 processing year (with results rounded). The reporting period aggregate amount is calculated using the actual/actual annualization method. The Budget ID 2 full year column represents the sum of Budget ID 2 reporting period aggregate amounts within the Budget ID 2 year, 1996, divided by the number of days in the Budget ID 2 processing year (again, with results rounded). The reporting period aggregate amount is calculated using the actual/actual actualization method. The Budget ID 1 variance column, designated "ZZBase variance" represents the sum of the Budget ID 1 reporting period aggregate amounts within the Budget ID 1 year minus the sum of the Budget ID 2 reporting period aggregate amounts within the Budget ID 2 year (results being rounded). Furthermore, the "%" column provides the budget variance amounts calculated in the preceding column (before rounding)

divided by the sum of the Budget ID 2 year with the result rounded to the nearest tenth.

FIGURE 18 shows the auxiliary support facility functions included with the present embodiment. Flow chart 390 shows that on-line entry provides input to intra-budget copy module 392 and inter-budget copy module 394. Intra-budget copy module 392 provides intra-budget selection criteria 396. Intra-budget selection criteria 396 goes to intra-budget copy/move/delete process 398. Inter-budget copy module 394 provides inter-budget copy selection criteria 400. Inter-budget copy selection criteria 400 goes to inter-budget copy process 402. Budget profile data 404 relates to rate and basis point add-on tables 406 and provides input to intra-budget copy/move/delete process 398 and inter-budget copy process 402. Inter-budget copy process 402 generates Inter-budget Copy Request report 408 and relates with budget calculation parameters 410 as well as BPS ledger 192. BPS ledger 192 may also associate with budget profile data 404 and intra-budget copy/move/delete process 398. Intra-budget request 412 comes from intra-budget copy/move/delete process 398.

Auxiliary support functions 390 are designed to assist during day-two operations to provide both inter-budget copy and intra-budget copy/move/delete features. Inter-budget copy features include the creation of a new budget using the characteristics and optionally the data from an existing budget. Intra-budget copy/move/delete features copying, moving, deleting selected budget values within the budget. In the creation and maintenance of budget information, facilities utilize existing budget information for the creation of new information. For example, when adding a new cost center whose budget data is similar to an existing cost center, data may be copied to the cost center, and then modified for the new cost

center. Another example might be the requirement to change data existing for a cost center from one cost center number to another cost center number. In addition, a need exists for copying an entire budget, or parts of a budget, to a new budget. The new budget may then be used to develop scenarios different from the original budget.

For data modification within a single budget identifier/year, either a copy, move or delete function may be used. The copy function copies BPS ledger 192 data for a specified organization, product, or customer identifier to a new organization, product, or customer identifier. The move function changes an existing organization, product, or customer identifier to a new organization, product or customer identifier. The delete function deletes BPS ledger 192 data for a specified organization, product, or customer.

The inter-budget copy request facility copies data from a source budget identifier to a destination budget identifier. This facility extracts selected data to a new budget where it can be manipulated independently of the central budget. This provides the ability to use different budget values and different rate scenarios. Data may be characterized as data stores, controls, and BPS ledger 192 data. Data stores available for copy include base rates, non-base rates, and base point add-ons.

Although the invention has been described in detail herein with reference to the illustrative embodiments, it is to be understood that this description is by way of example only and is not to be construed in a limiting sense. For example, the following exemplary modification is well within the scope of the present invention. It is to be further understood, therefore, that numerous changes in the details of the embodiments of the

invention and additional embodiments of the invention, will be apparent to, and may be made by, persons of ordinary skill in the art having reference to this description. It is contemplated that all such changes and additional embodiments are within the spirit and true scope of the invention as claimed below.

WHAT IS CLAIMED IS:

1. An electronic budgeting and planning method for use in a data processing system including a plurality of interactive workstations for providing budgeting and planning information and decision tools for managing a financial institution, comprising the steps of:

extracting a plurality of budgeting policies from a plurality of external budgeting policy external sources;

configuring a budgeting and planning data structure in accordance with the plurality of budgeting policies;

extracting a plurality of financial account data sets relating to financial accounts from a plurality of financial account data set sources;

populating the budgeting and planning data structure with the extracted plurality of financial account data sets; and

modifying the populated budgeting and planning data structure to refine the populated budgeting and planning data structure for creating a final budgeting and planning data structure

2. The method of Claim 1, further comprising the step of distributing the final budgeting and planning data structure to the plurality of interactive workstations.

3. The method of Claim 1, further comprising the step of integrating the budgeting and planning data structure with a profitability system associated with the financial institution.

4. The method of Claim 1, further comprising the steps of generating a plurality of the budgeting and planning data structures and associating selected ones of the budgeting and planning data structures with one another.

5. The method of Claim 1, further comprising the step of performing a plurality of net interest margin calculations relating to the plurality of financial account data sets.

6. The method of Claim 1, further comprising the step of applying a plurality of growth assumptions associated with the plurality of financial account data sets in deriving the final budgeting and planning data structure.

7. An electronic budgeting and planning system for use in a data processing system including a plurality of interactive workstations for providing budgeting and planning information and decision tools for managing a financial institution, comprising the steps of:

an extract facility for extracting a plurality of budgeting policies from a plurality of external budgeting policy external sources and for extracting a plurality of financial account data sets relating to financial accounts from a plurality of financial account data set sources;

a budget configuration facility for configuring a budgeting and planning data structure in accordance with the plurality of budgeting policies;

a budget population facility for populating the budgeting and planning data structure with the extracted plurality of financial account data sets;

a budget modification facility for modifying the populated budgeting and planning data structure to refine the populated budgeting and planning data structure for creating a final budgeting and planning data structure; and

a budget distribution facility for distributing the final budgeting and planning data structure to the plurality of interactive workstations.

8. The system of Claim 7, further comprising an integrating instruction set for integrating the budgeting and planning data structure with a profitability system associated with the financial institution.

9. The system of Claim 7, further comprising associating instructions for generating a plurality of the budgeting and planning data structures and associating selected ones of the budgeting and planning data structures with one another.

10. The system of Claim 7, further comprising net interest margin calculation instructions for performing a plurality of net interest margin calculations relating to the plurality of financial account data sets.

11. The system of Claim 7, further comprising growth assumption instructions for applying a plurality of growth assumptions associated with the plurality of financial account data sets in deriving the final budgeting and planning data structure.

12. A method for forming an electronic budgeting and planning system for use in a data processing system including a plurality of interactive workstations for providing budgeting and planning information and decision tools for managing a financial institution, comprising the steps of:

forming an extract facility for extracting a plurality of budgeting policies from a plurality of external budgeting policy external sources and for extracting a plurality of financial account data sets relating to financial accounts from a plurality of financial account data set sources;

forming a budget configuration facility for configuring a budgeting and planning data structure in accordance with the plurality of budgeting policies;

forming a budget population facility for populating the budgeting and planning data structure with the extracted plurality of financial account data sets;

forming a budget modification facility for modifying the populated budgeting and planning data structure to refine the populated budgeting and planning data structure for creating a final budgeting and planning data structure; and

forming a budget distribution facility for distributing the final budgeting and planning data structure to the plurality of interactive workstations.

13. The system of Claim 12, further comprising the step of forming an integrating instruction set for integrating the budgeting and planning data structure with a profitability system associated with the financial institution.

14. The system of Claim 12, further comprising the step of forming associating instructions for generating a plurality of the budgeting and planning data structures and associating selected ones of the budgeting and planning data structures with one another.

15. The system of Claim 12, further comprising the step of forming net interest margin calculation instructions for performing a plurality of net interest margin calculations relating to the plurality of financial account data sets.

16. The system of Claim 12, further comprising the step of forming growth assumption instructions for applying a plurality of growth assumptions associated with the plurality of financial account data sets in deriving the final budgeting and planning data structure.

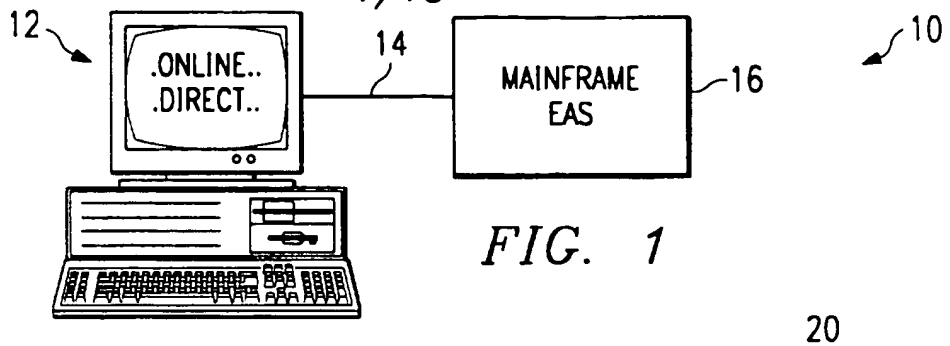


FIG. 1

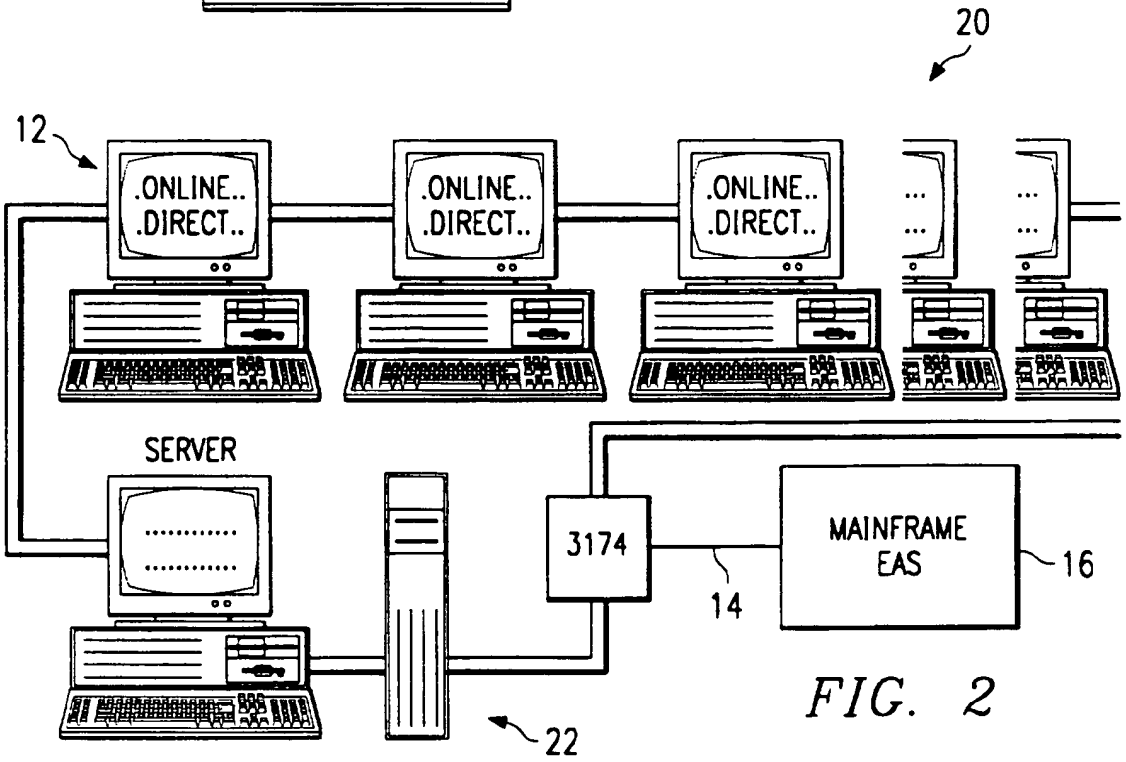


FIG. 2

FIG. 6

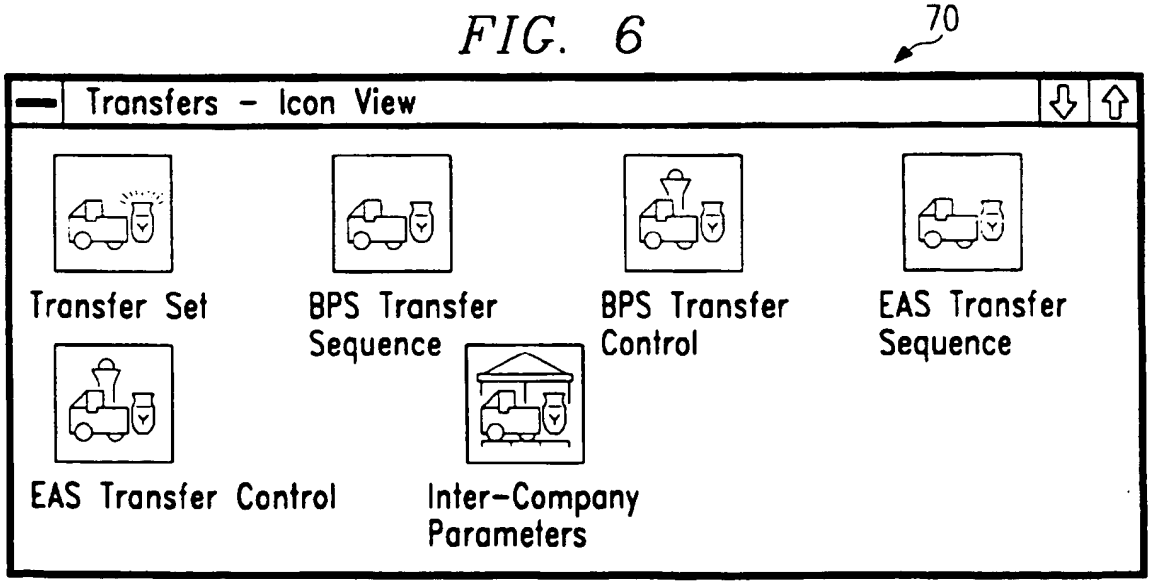


FIG. 3

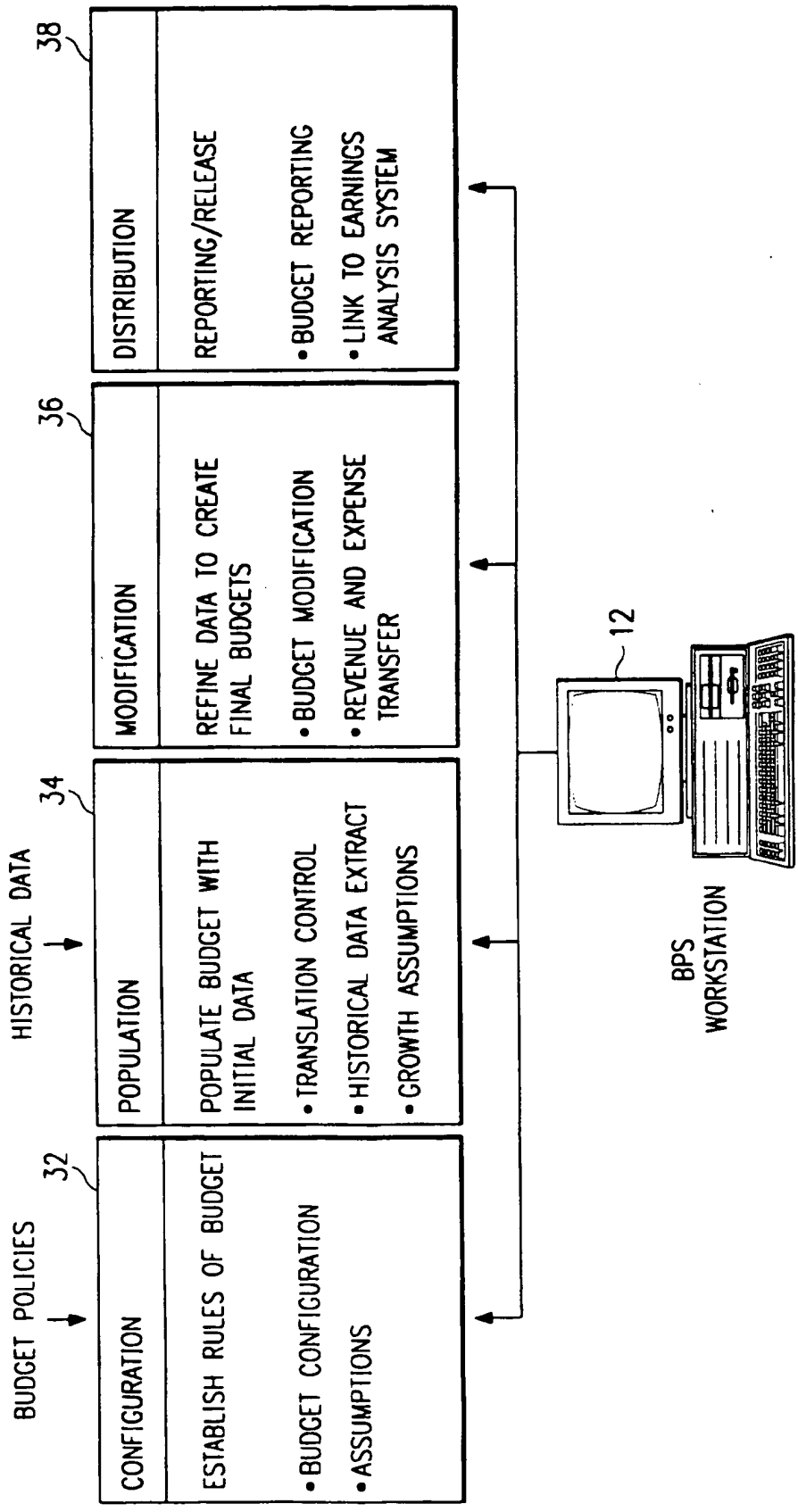
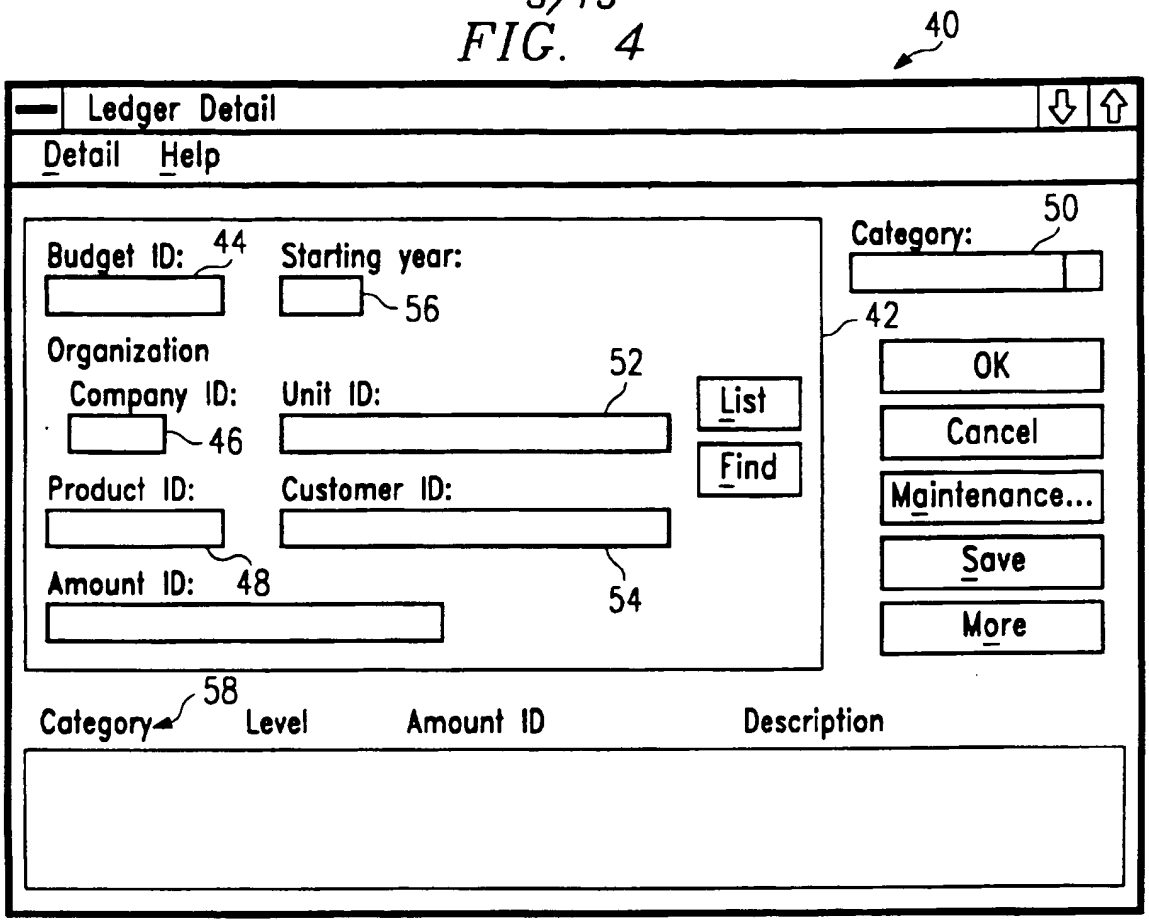

30
BUDGET POLICIES
32
CONFIGURATION
ESTABLISH RULES OF BUDGET
• BUDGET CONFIGURATION
• ASSUMPTIONS
HISTORICAL DATA
34
POPULATION
POPULATE BUDGET WITH INITIAL DATA
• TRANSLATION CONTROL
• HISTORICAL DATA EXTRACT
• GROWTH ASSUMPTIONS
36
MODIFICATION
REFINE DATA TO CREATE FINAL BUDGETS
• BUDGET MODIFICATION
• REVENUE AND EXPENSE TRANSFER
38
DISTRIBUTION
REPORTING/RELEASE
• BUDGET REPORTING
• LINK TO EARNINGS ANALYSIS SYSTEM
12
BPS WORKSTATION

FIG. 4


40
Ledger Detail
Detail Help
Budget ID:
44
Starting year:
56
Organization
Company ID:
46
Unit ID:
52
Product ID:
Customer ID:
Amount ID:
48
54
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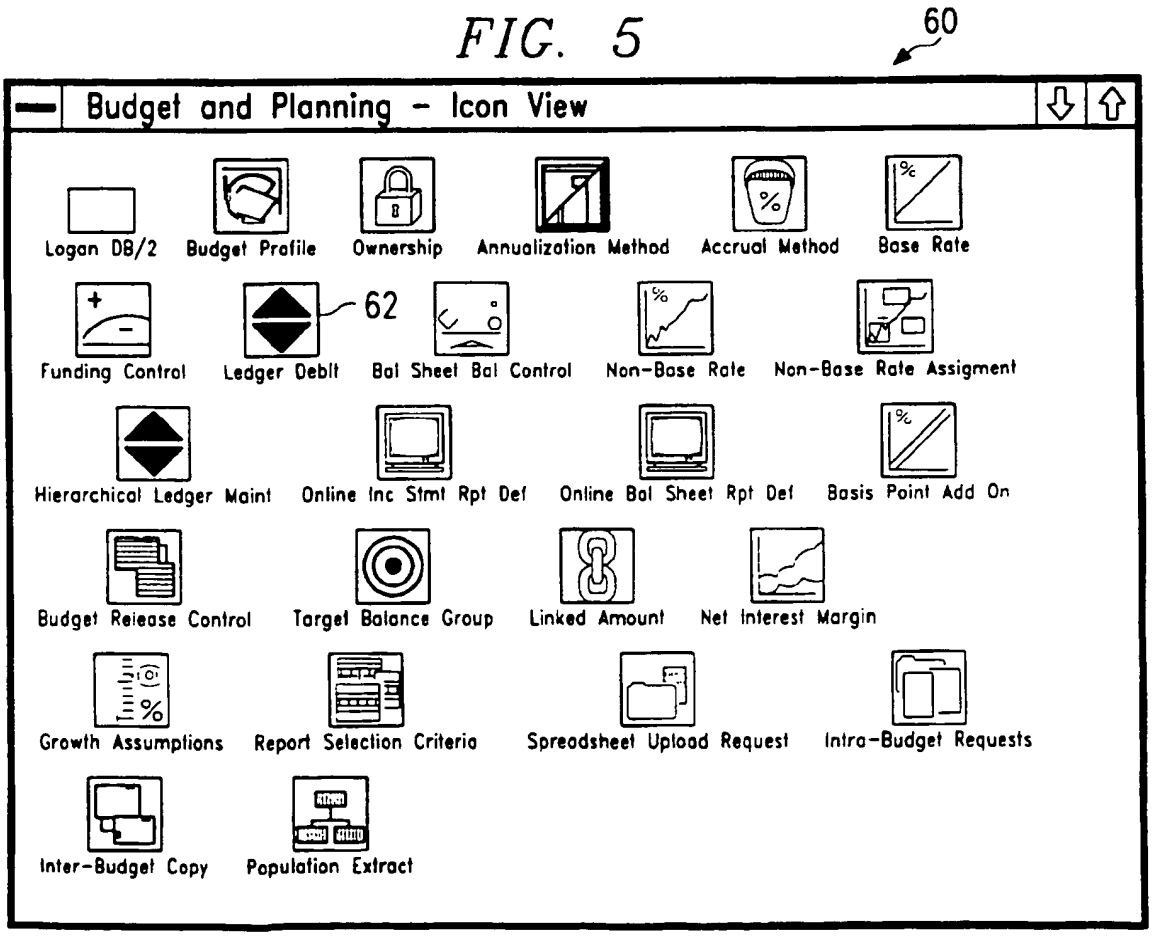
Save
More
58
Category
Level
Amount ID
Description

FIG. 5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Budget and Planning - Icon View
Logan DB/2
Budget Profile
Ownership
Annualization Method
Accrual Method
Base Rate
Funding Control
Ledger Debit
62
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Non-Base Rate
Non-Base Rate Assigment
Hierarchical Ledger Maint
Online Inc Stmt Rpt Def
Online Bal Sheet Rpt Def
Basis Point Add On
Budget Release Control
Target Balance Group
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Intra-Budget Requests
Inter-Budget Copy
Population Extract

FIG. 7

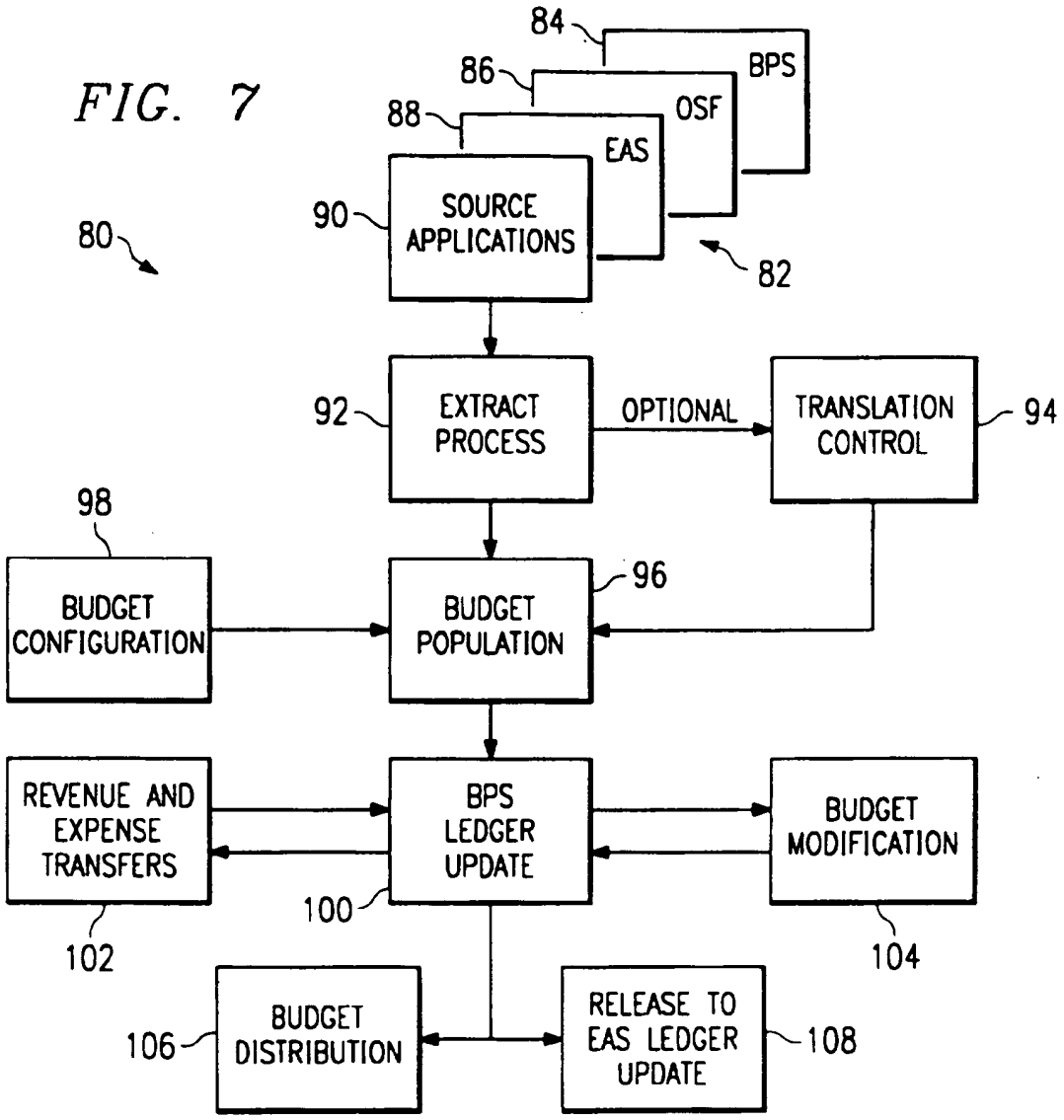

84
BPS
86
OSF
88
EAS
90
SOURCE APPLICATIONS
82
80
92
EXTRACT PROCESS
OPTIONAL
TRANSLATION CONTROL
94
98
BUDGET CONFIGURATION
96
BUDGET POPULATION
REVENUE AND EXPENSE TRANSFERS
BPS LEDGER UPDATE
BUDGET MODIFICATION
100
102
104
106
BUDGET DISTRIBUTION
RELEASE TO EAS LEDGER UPDATE
108

FIG. 8

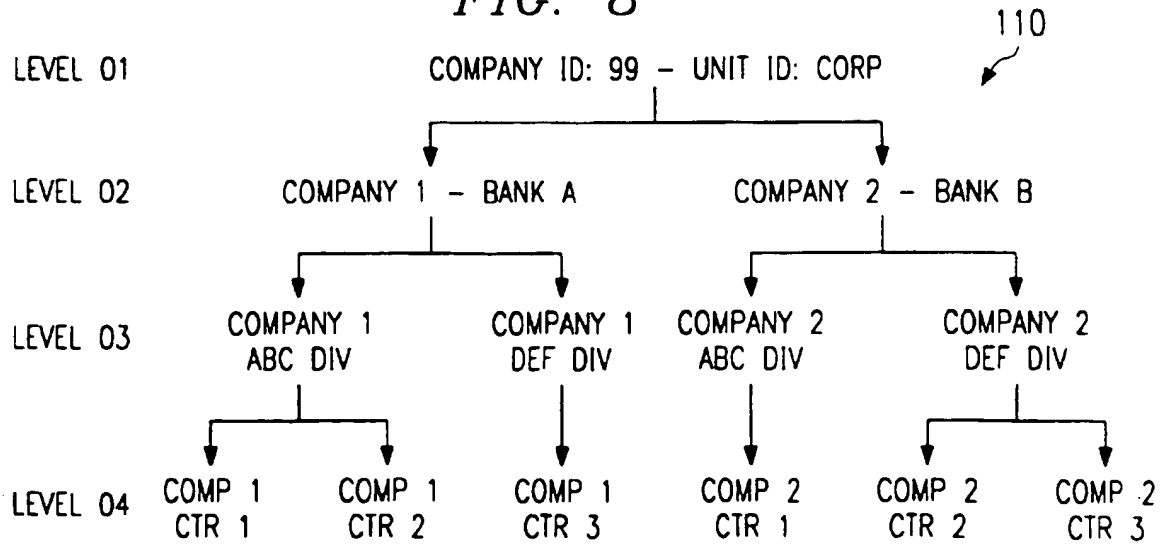
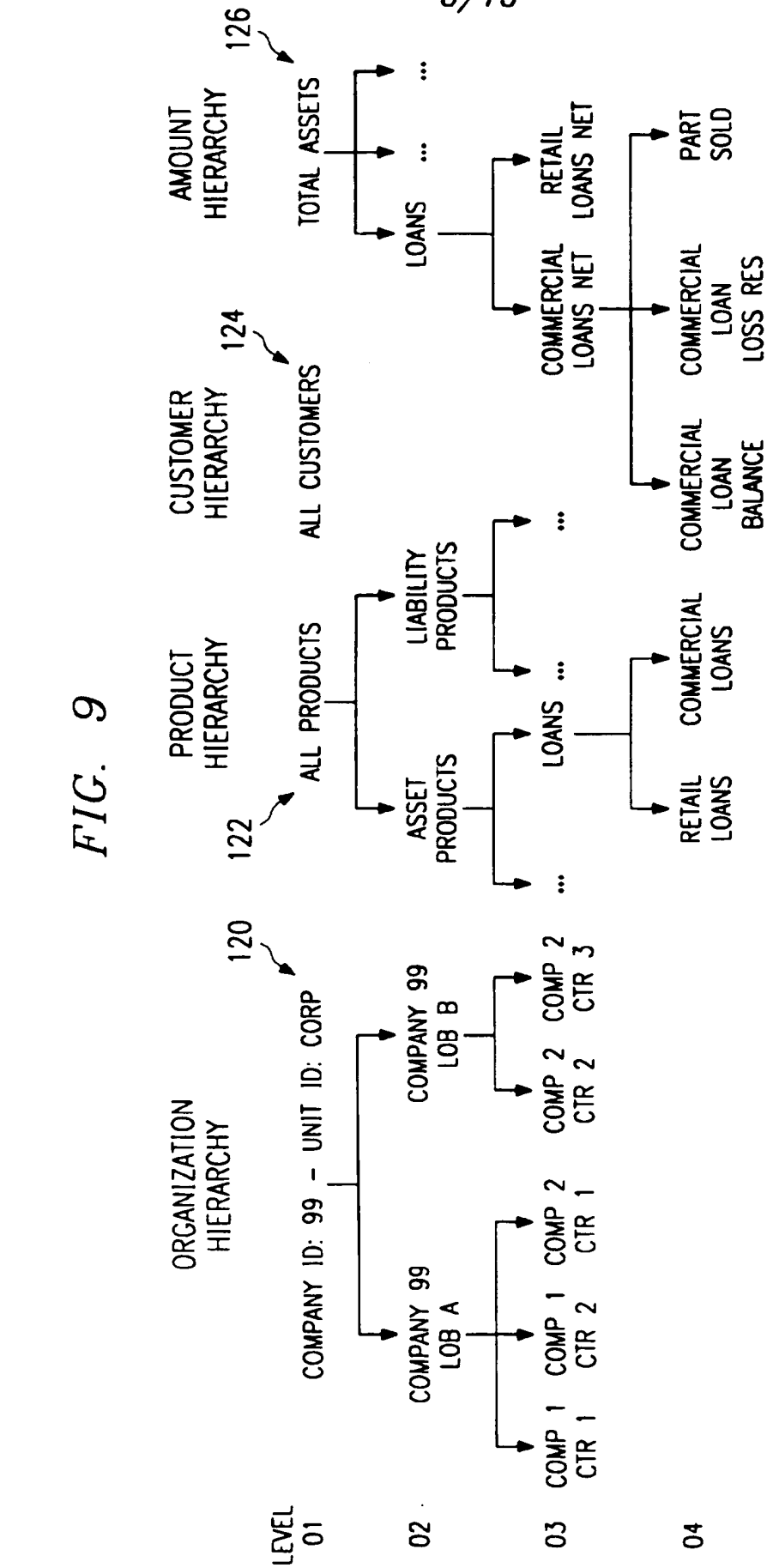

110
LEVEL 01
COMPANY ID: 99 - UNIT ID: CORP
LEVEL 02
COMPANY 1 - BANK A
COMPANY 2 - BANK B
LEVEL 03
COMPANY 1 ABC DIV
COMPANY 1 DEF DIV
COMPANY 2 ABC DIV
COMPANY 2 DEF DIV
LEVEL 04
COMP 1 CTR 1
COMP 1 CTR 2
COMP 1 CTR 3
COMP 2 CTR 1
COMP 2 CTR 2
COMP 2 CTR 3

FIG. 9


LEVEL
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02
03
04
ORGANIZATION HIERARCHY
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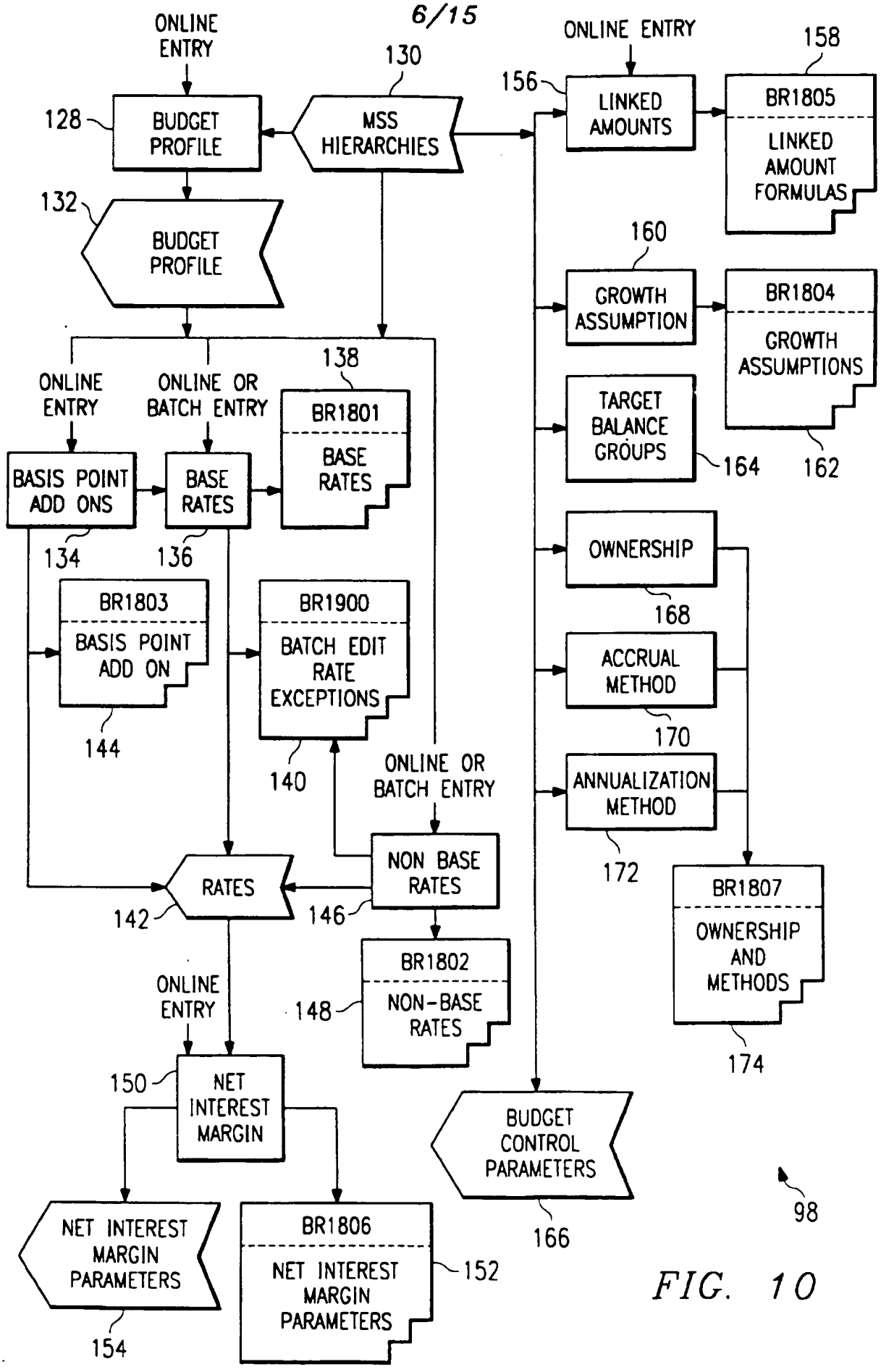
COMPANY 99 LOB A
COMPANY 99 LOB B
COMP 1 CTR 1
COMP 1 CTR 2
COMP 2 CTR 1
COMP 2 CTR 2
COMP 2 CTR 3
PRODUCT HIERARCHY
122
ALL PRODUCTS
ASSET PRODUCTS
LIABILITY PRODUCTS
LOANS
RETAIL LOANS
COMMERCIAL LOANS
CUSTOMER HIERARCHY
124
ALL CUSTOMERS
AMOUNT HIERARCHY
126
TOTAL ASSETS
LOANS
COMMERCIAL LOANS NET
RETAIL LOANS NET
COMMERCIAL LOAN BALANCE
COMMERCIAL LOAN LOSS RES
PART SOLD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BUDGET PROFILE
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MSS HIERARCHIES
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BUDGET PROFILE
ONLINE ENTRY
ONLINE OR BATCH ENTRY
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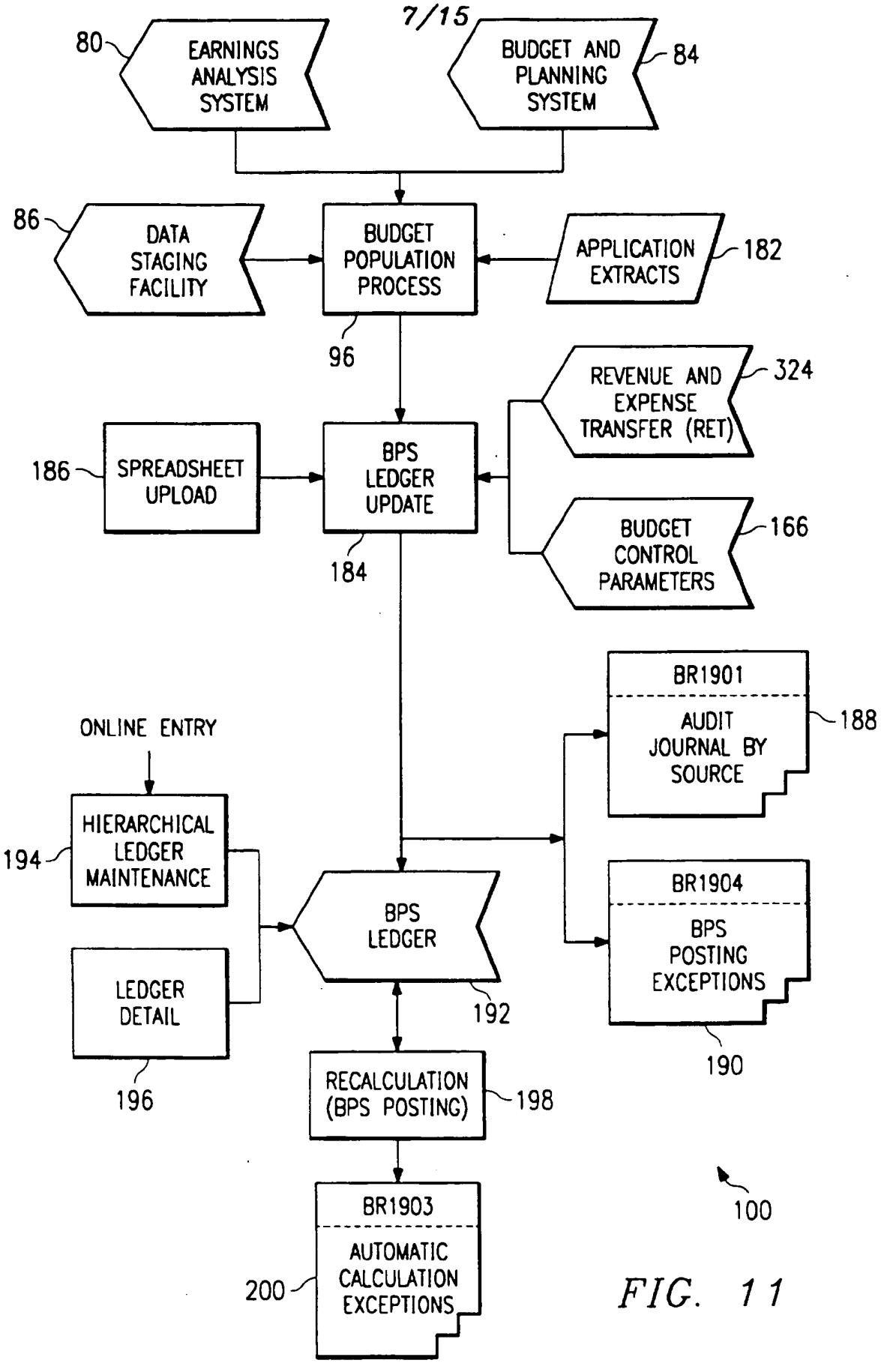
BR1801
BASE RATES
BASIS POINT ADD ONS
BASE RATES
134
136
BR1803
BASIS POINT ADD ON
144
BR1900
BATCH EDIT RATE EXCEPTIONS
140
ONLINE OR BATCH ENTRY
NON BASE RATES
RATES
142
146
BR1802
NON-BASE RATES
148
ONLINE ENTRY
150
NET INTEREST MARGIN
NET INTEREST MARGIN PARAMETERS
154
BR1806
NET INTEREST MARGIN PARAMETERS
152
ONLINE ENTRY
156
LINKED AMOUNTS
158
BR1805
LINKED AMOUNT FORMULAS
160
GROWTH ASSUMPTION
BR1804
GROWTH ASSUMPTIONS
162
TARGET BALANCE GROUPS
164
OWNERSHIP
168
ACCRUAL METHOD
170
ANNUALIZATION METHOD
172
BR1807
OWNERSHIP AND METHODS
174
BUDGET CONTROL PARAMETERS
166
98

FIG. 10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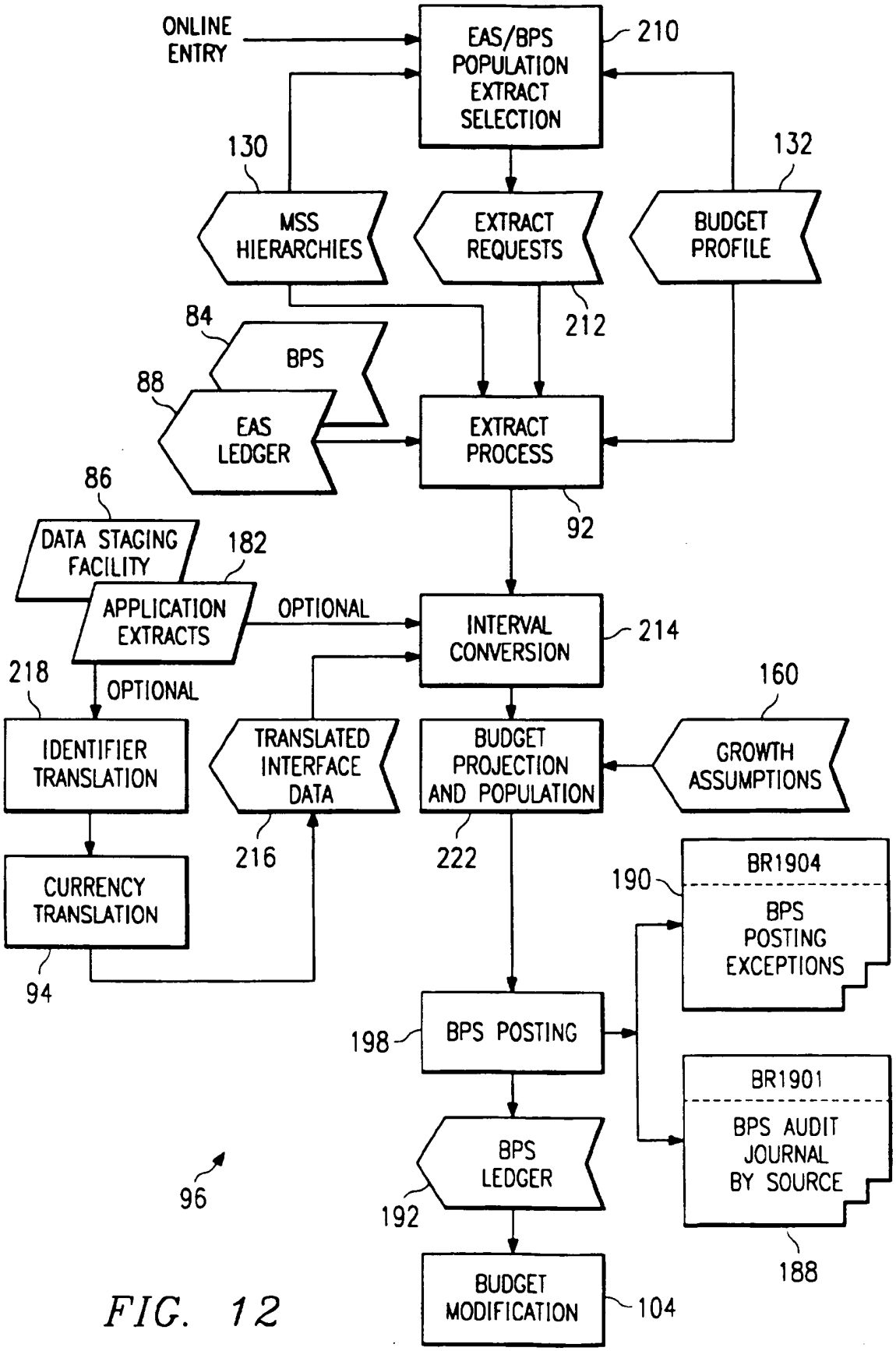
EARNINGS ANALYSIS SYSTEM
BUDGET AND PLANNING SYSTEM
84
86
DATA STAGING FACILITY
BUDGET POPULATION PROCESS
APPLICATION EXTRACTS
182
96
REVENUE AND EXPENSE TRANSFER (RET)
324
186
SPREADSHEET UPLOAD
BPS LEDGER UPDATE
BUDGET CONTROL PARAMETERS
166
184
BR1901
AUDIT JOURNAL BY SOURCE
188
ONLINE ENTRY
HIERARCHICAL LEDGER MAINTENANCE
194
BPS LEDGER
BR1904
BPS POSTING EXCEPTIONS
LEDGER DETAIL
192
190
196
RECALCULATION (BPS POSTING)
198
100
BR1903
AUTOMATIC CALCULATION EXCEPTIONS
200

FIG. 11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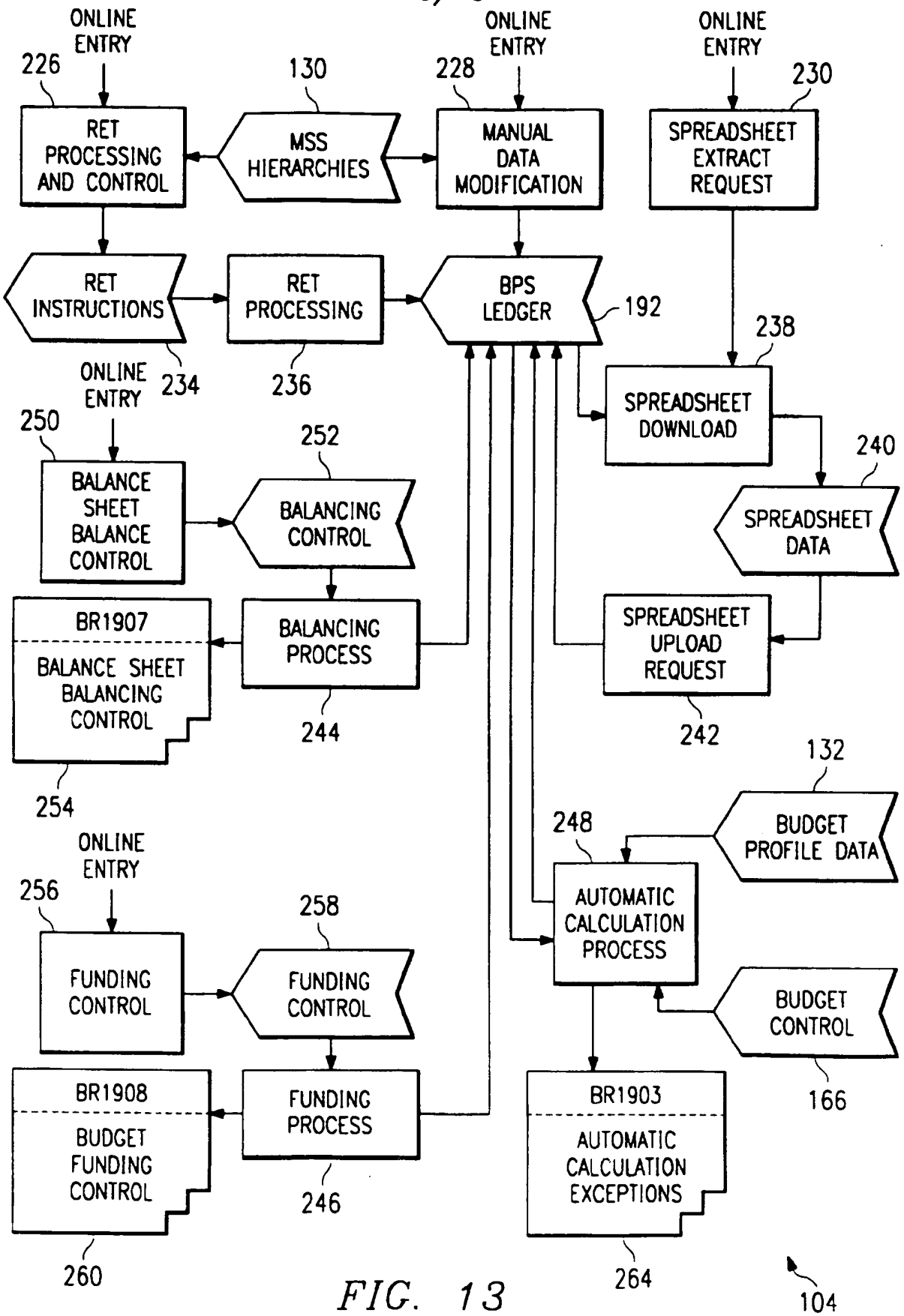
EAS/BPS POPULATION EXTRACT SELECTION
210
130
132
MSS HIERARCHIES
EXTRACT REQUESTS
BUDGET PROFILE
212
84
BPS
88
EAS LEDGER
EXTRACT PROCESS
86
92
DATA STAGING FACILITY
182
APPLICATION EXTRACTS
OPTIONAL
INTERVAL CONVERSION
214
218
OPTIONAL
160
IDENTIFIER TRANSLATION
TRANSLATED INTERFACE DATA
BUDGET PROJECTION AND POPULATION
GROWTH ASSUMPTIONS
216
222
BR1904
190
BPS POSTING EXCEPTIONS
CURRENCY TRANSLATION
94
198
BPS POSTING
BR1901
BPS AUDIT JOURNAL BY SOURCE
96
BPS LEDGER
192
188
BUDGET MODIFICATION
104

FIG. 12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MANUAL DATA MODIFICATION
ONLINE ENTRY
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SPREADSHEET EXTRACT REQUEST
RET INSTRUCTIONS
234
RET PROCESSING
236
BPS LEDGER
192
238
SPREADSHEET DOWNLOAD
240
SPREADSHEET DATA
ONLINE ENTRY
250
BALANCE SHEET BALANCE CONTROL
252
BALANCING CONTROL
BR1907
BALANCE SHEET BALANCING CONTROL
254
BALANCING PROCESS
244
SPREADSHEET UPLOAD REQUEST
242
132
BUDGET PROFILE DATA
248
ONLINE ENTRY
256
FUNDING CONTROL
258
FUNDING CONTROL
AUTOMATIC CALCULATION PROCESS
BUDGET CONTROL
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BR1908
BUDGET FUNDING CONTROL
260
FUNDING PROCESS
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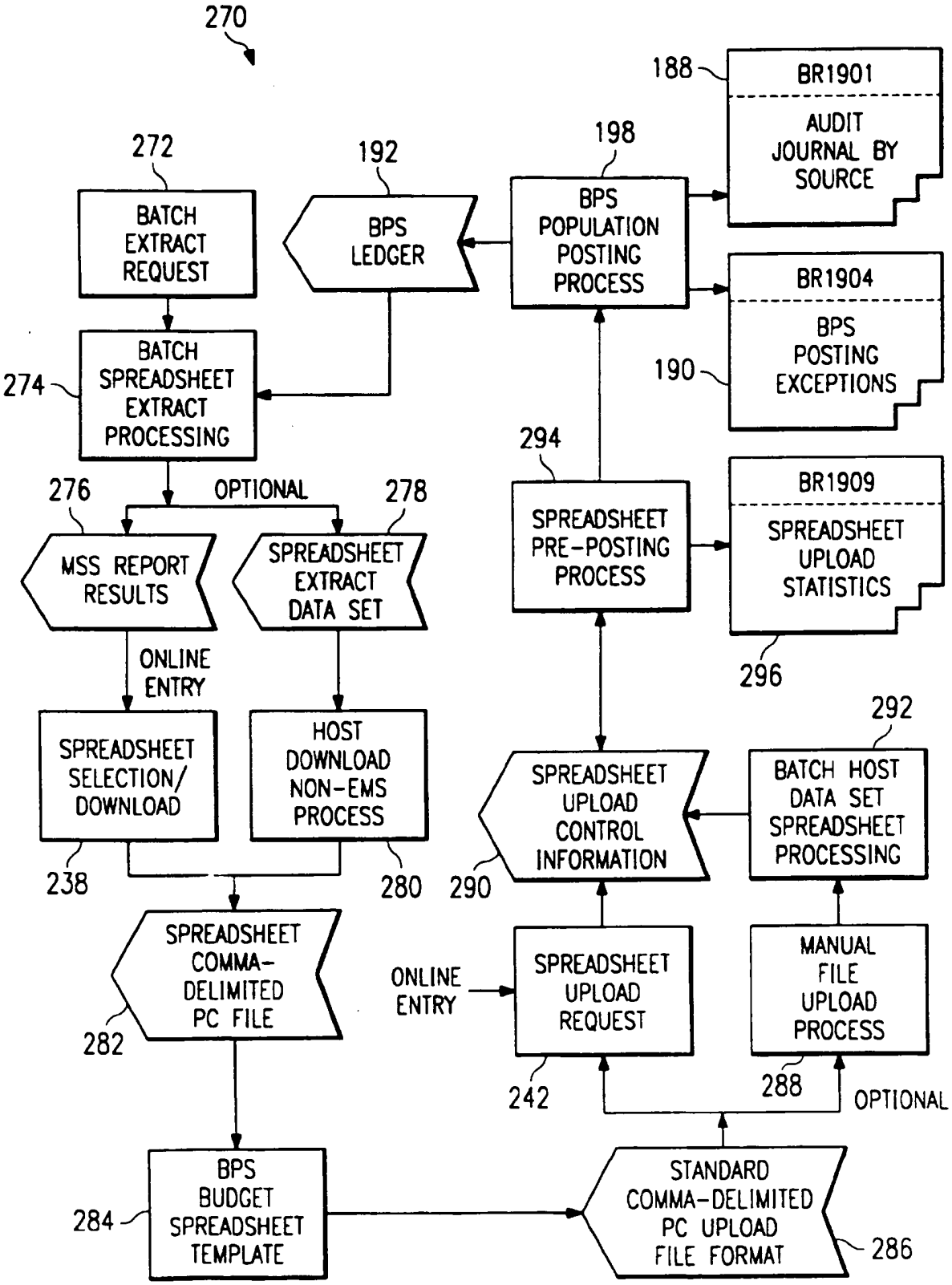
BR1903
AUTOMATIC CALCULATION EXCEPTIONS
264
104

FIG. 13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188
BR1901
AUDIT JOURNAL BY SOURCE
198
272
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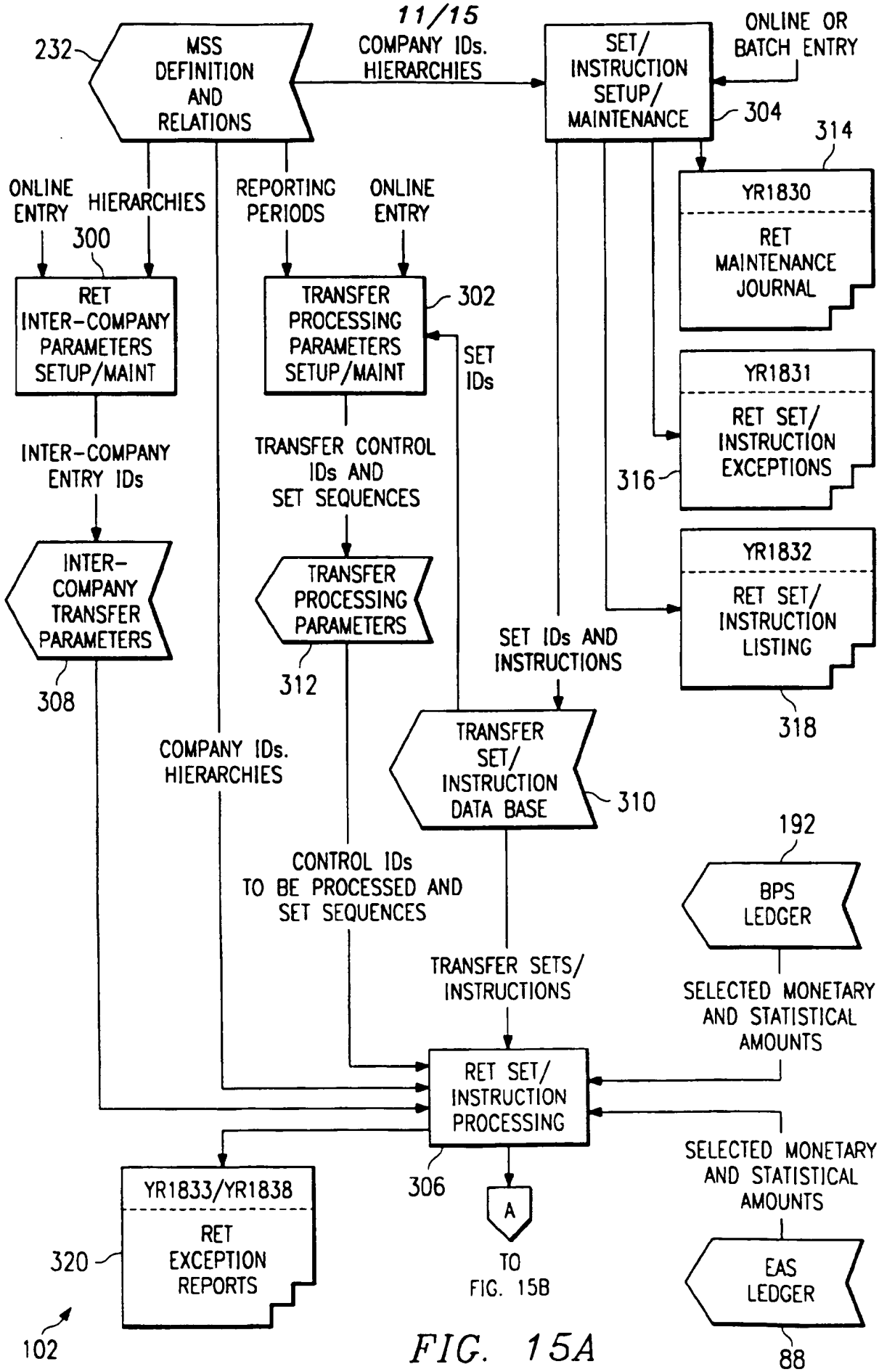
BATCH EXTRACT REQUEST
BPS LEDGER
BPS POPULATION POSTING PROCESS
BR1904
BPS POSTING EXCEPTIONS
190
274
BATCH SPREADSHEET EXTRACT PROCESSING
294
276
OPTIONAL
278
BR1909
SPREADSHEET UPLOAD STATISTICS
SPREADSHEET PRE-POSTING PROCESS
MSS REPORT RESULTS
SPREADSHEET EXTRACT DATA SET
296
ONLINE ENTRY
292
SPREADSHEET SELECTION/ DOWNLOAD
HOST DOWNLOAD NON-EMS PROCESS
SPREADSHEET UPLOAD CONTROL INFORMATION
BATCH HOST DATA SET SPREADSHEET PROCESSING
238
280
290
SPREADSHEET COMMA-DELIMITED PC FILE
ONLINE ENTRY
SPREADSHEET UPLOAD REQUEST
MANUAL FILE UPLOAD PROCESS
282
242
288
OPTIONAL
BPS BUDGET SPREADSHEET TEMPLATE
STANDARD COMMA-DELIMITED PC UPLOAD FILE FORMAT
284
286

FIG. 14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SET/ INSTRUCTION SETUP/ MAINTENANCE
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ONLINE ENTRY
HIERARCHIES
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REPORTING PERIODS
ONLINE ENTRY
RET INTER-COMPANY PARAMETERS SETUP/MAINT
TRANSFER PROCESSING PARAMETERS SETUP/MAINT
302
SET IDs
YR1831
RET SET/ INSTRUCTION EXCEPTIONS
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INTER-COMPANY ENTRY IDs
TRANSFER CONTROL IDs AND SET SEQUENCES
INTER-COMPANY TRANSFER PARAMETERS
308
TRANSFER PROCESSING PARAMETERS
312
SET IDs AND INSTRUCTIONS
YR1832
RET SET/ INSTRUCTION LISTING
318
COMPANY IDs. HIERARCHIES
TRANSFER SET/ INSTRUCTION DATA BASE
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192
BPS LEDGER
CONTROL IDs TO BE PROCESSED AND SET SEQUENCES
TRANSFER SETS/ INSTRUCTIONS
SELECTED MONETARY AND STATISTICAL AMOUNTS
RET SET/ INSTRUCTION PROCESSING
SELECTED MONETARY AND STATISTICAL AMOUNTS
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306
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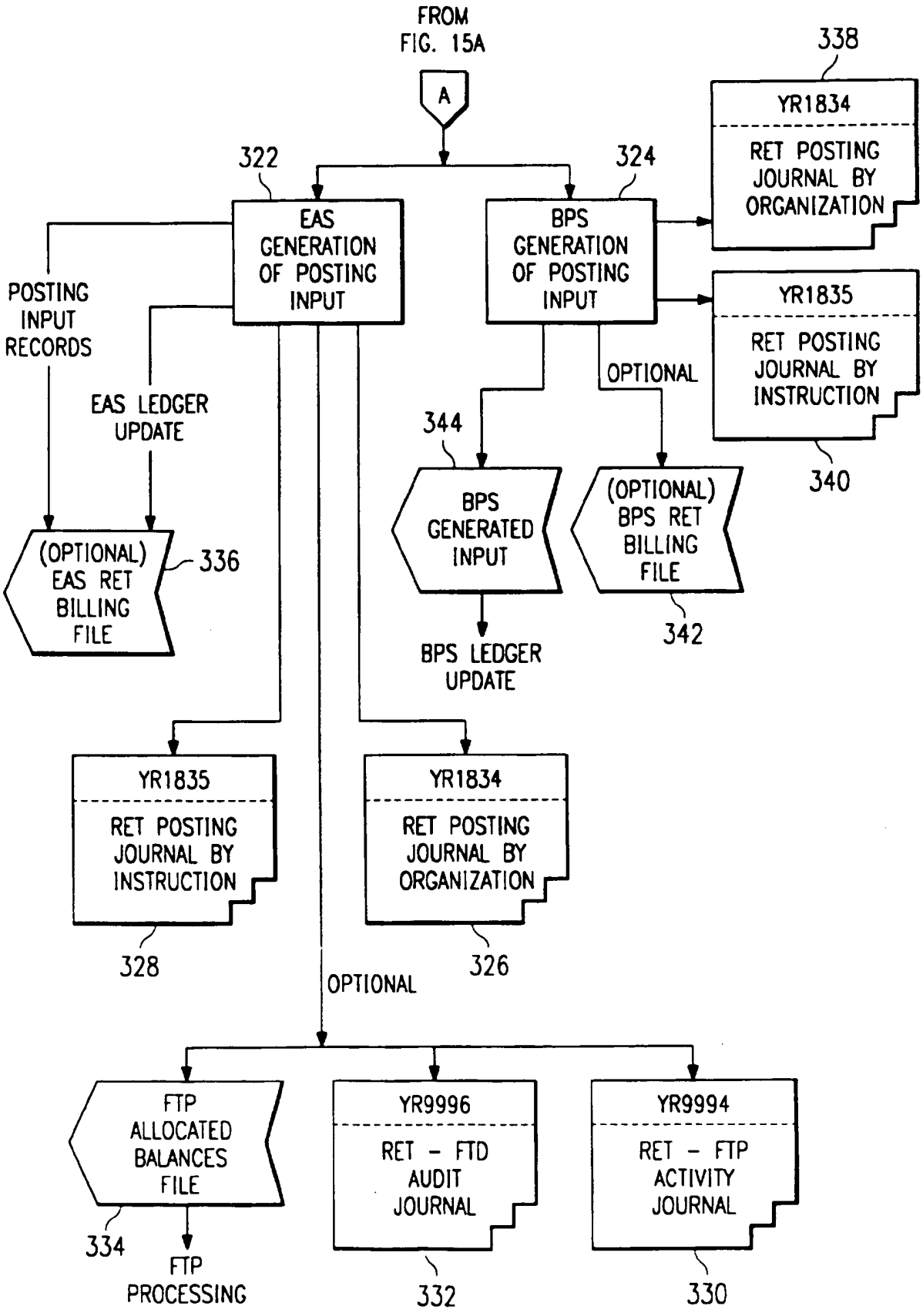
TO FIG. 15B
EAS LEDGER
88
102

FIG. 15A


FROM FIG. 15A
A
322
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EAS GENERATION OF POSTING INPUT
BPS GENERATION OF POSTING INPUT
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YR1835
RET POSTING JOURNAL BY INSTRUCTION
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POSTING INPUT RECORDS
EAS LEDGER UPDATE
OPTIONAL
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BPS GENERATED INPUT
(OPTIONAL) BPS RET BILLING FILE
342
BPS LEDGER UPDATE
(OPTIONAL) EAS RET BILLING FILE
336
YR1835
RET POSTING JOURNAL BY INSTRUCTION
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YR1834
RET POSTING JOURNAL BY ORGANIZATION
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OPTIONAL
FTP ALLOCATED BALANCES FILE
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FTP PROCESSING
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RET - FTD AUDIT JOURNAL
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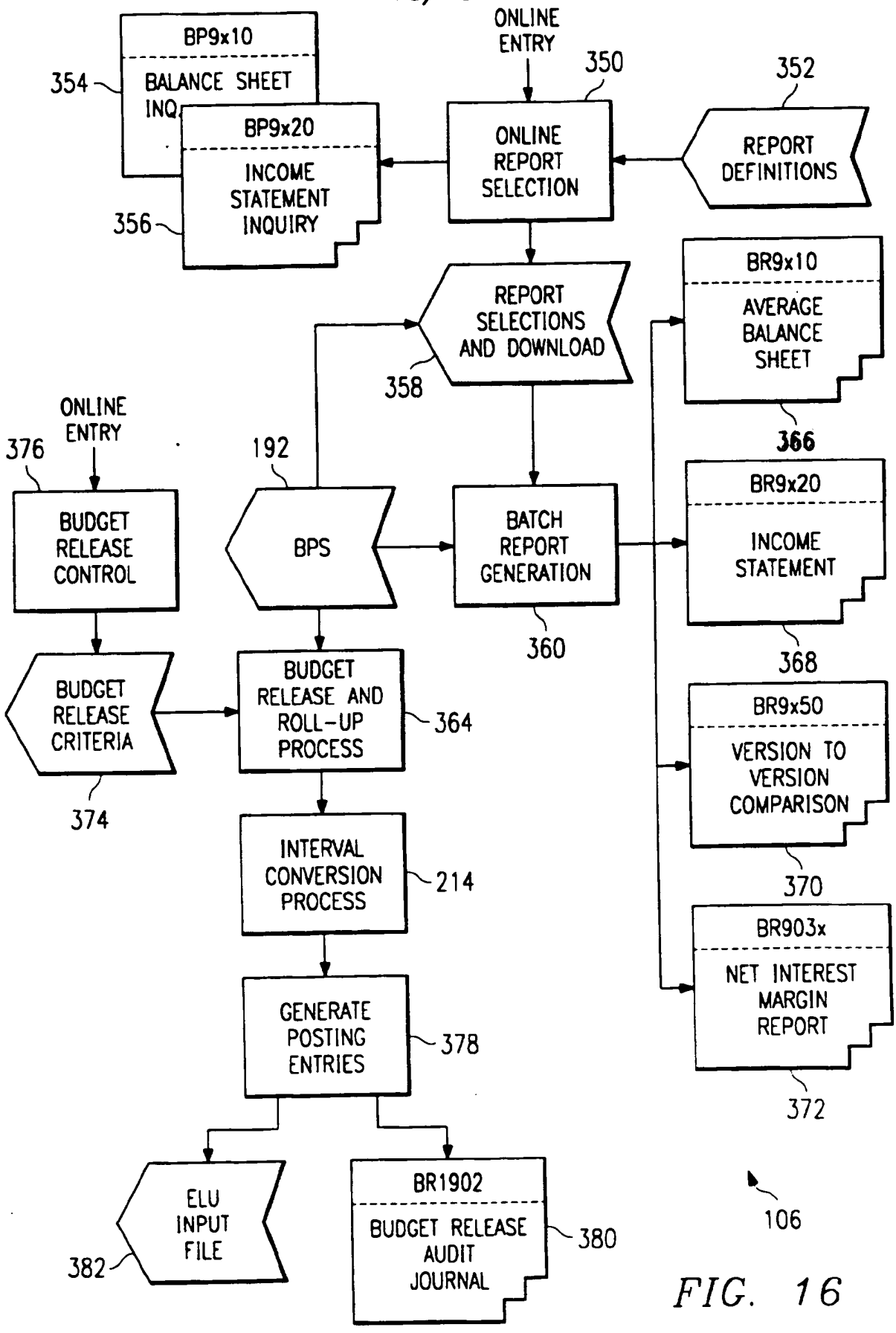
YR9994
RET - FTP ACTIVITY JOURNAL
330

FIG. 15B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ONLINE ENTRY
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REPORT DEFINITIONS
REPORT SELECTIONS AND DOWNLOAD
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BR9x10
AVERAGE BALANCE SHEET
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ONLINE ENTRY
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BUDGET RELEASE CONTROL
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BPS
BATCH REPORT GENERATION
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BR9x20
INCOME STATEMENT
368
BUDGET RELEASE CRITERIA
374
BUDGET RELEASE AND ROLL-UP PROCESS
364
BR9x50
VERSION TO VERSION COMPARISON
370
INTERVAL CONVERSION PROCESS
214
BR903x
NET INTEREST MARGIN REPORT
372
GENERATE POSTING ENTRIES
378
ELU INPUT FILE
382
BR1902
BUDGET RELEASE AUDIT JOURNAL
380
106

FIG. 16

BP9010 14/15 RUN DATE 03/02/94 13:11 PAGE 1

ORGANIZATION BALANCE SHEET
(000)

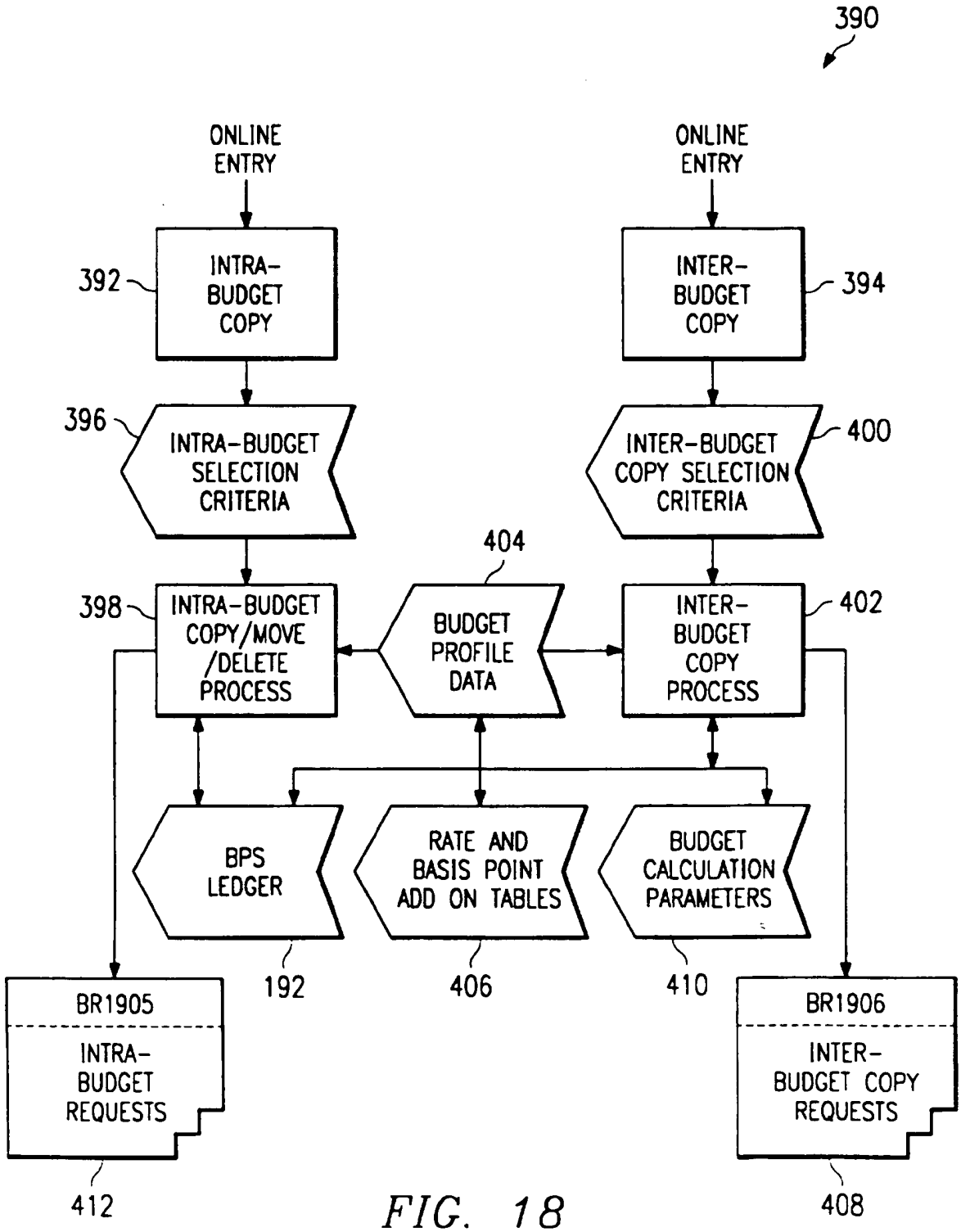
BUDGET ID 1: ZZBASE YEAR: 1994
BUDGET ID 2: BUD1 YEAR: 1996

HIERARCHY POINT 999 EASENT
EAS ENTERPRISES
EAS ENTERPRISES

01/31/94	02/28/94	03/31/94	04/30/94	ZZBASE	BUD1	ZZBASE	%
05/31/94	06/30/94	07/31/94	08/31/94	FULL	FULL	VARIANCE	
09/30/94	10/31/94	11/30/94	12/31/94	YEAR	YEAR		
ASSETS							
EARNING ASSETS							
26,334,995	26,590,611	26,610,041	27,509,232				
27,462,822	27,077,823	28,930,194	29,309,367				
30,112,827	30,547,236	31,285,863	31,552,463	28,622,658	9,785,213	18,837,445	192.5
NON-EARNING ASSETS							
2,505,981	2,705,152	2,661,079	2,620,377				
2,616,319	2,852,885	3,214,616	3,077,617				
2,994,725	2,976,856	2,880,658	2,890,915	2,834,105	1,744,502	1,089,603	62.5
TOTAL ASSETS							
28,840,976	29,295,763	29,271,120	30,129,609				
30,079,141	29,930,708	32,144,810	32,386,984				
33,107,552	33,524,092	34,166,521	34,443,378	31,456,763	11,529,715	19,927,048	172.8
AVAILABLE FUNDS							
AVAILABLE DEPOSITS							
21,813,432	22,259,323	22,313,717	22,364,837				
22,263,791	22,260,250	23,839,611	24,122,684				
24,518,172	25,129,191	25,140,977	24,990,691	23,425,903	7,285,346	16,140,557	221.5
BORROWINGS							
3,959,996	3,857,511	3,709,465	3,867,530				
4,092,371	3,708,359	3,745,235	3,742,921				
3,984,344	3,956,987	4,610,715	5,141,288	4,032,698	4,220,998	188.300-	4.5-
MISC LIABILITIES							
378,536	380,513	422,614	443,034				
569,932	398,649	557,193	684,965				
767,887	665,476	662,352	671,722	551,440	0	551,440	0.0
LIABILITIES							
2,058,503	2,144,305	2,201,232	2,141,337				
2,060,973	2,440,313	2,761,250	2,589,956				
2,600,835	2,522,460	2,500,089	2,479,200	2,376,434	1,523,365	853,069	56.0
CAPITAL							
1,542,401	1,563,184	1,531,333	1,827,218				
1,605,268	1,632,602	1,755,207	1,775,742				
1,773,323	1,790,613	1,806,774	1,727,190	1,694,595	858,999	835,596	97.3
TOTAL AVAILABLE FUNDS							
29,752,868	30,204,836	30,178,361	30,643,956				
30,592,335	30,440,173	32,658,496	32,916,268				
33,644,561	34,064,727	34,720,907	35,010,091	32,081,071	13,888,708	18,192,363	131.0

END OF REPORT BP9010

FIG. 17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INTER-BUDGET COPY SELECTION CRITERIA
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404
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INTER-BUDGET COPY PROCESS
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BPS LEDGER
RATE AND BASIS POINT ADD ON TABLES
BUDGET CALCULATION PARAMETERS
192
406
410
BR1905
INTRA-BUDGET REQUESTS
BR1906
INTER-BUDGET COPY REQUESTS
412
408

FIG. 18

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/04290

A. CLASSIFICATION OF SUBJECT MATTER
IPC(6) :G06F 157:00
US CL :364/401, 406, 408; 395/12, 157, 159
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 364/401, 406, 408; 395/12, 157, 159

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category°	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US, A, 5,442,731 (TANAKA ET AL.) 15 AUGUST 1995, THE ABSTRACT.	1-16
A	US, A, 5,321,620 (TANAKA ET AL.) 14 JUNE 1994, NOTE THE ABSTRACT.	1-16
A	US, A, 4,953,085 (ATKINS) 28 AUGUST 1990, NOTE THE ABSTRACT.	1-16
A	US, A, 4,942,527 (SCHUMACHER) 17 JULY 1990, NOTE COLUMN 7, LINE 60 TO COLUMN 16, LINE 13.	1-16
A	GOVERNMENT FINANCE REVIEW, V9, N6, ISSUED DECEMBER 1993, BESTOR, MIKE, "NEGOTIATING SKILLS FOR BUDGET OFFICERS", P15(5). NOTE THE ENTIRE DOCUMENT.	1-16

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

°	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search
20 MAY 1996

Date of mailing of the international search report
14 JUN 1996

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231
Facsimile No. (703) 305-3230

Authorized officer
DONALD McELHENY
Telephone No. (703) 305-3894

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/04290

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SAVINGS BANK JOURNAL, V59N3, ISSUED MAY 1978, "BUDGETING AND FINANCIAL PLANNING TECHNIQUES", PP30-32. NOTE THE ENTIRE DOCUMENT.	1-16